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January 1994

CAR ACTION

THE WORLD'S LEADING R/C CAR MAGAZINE

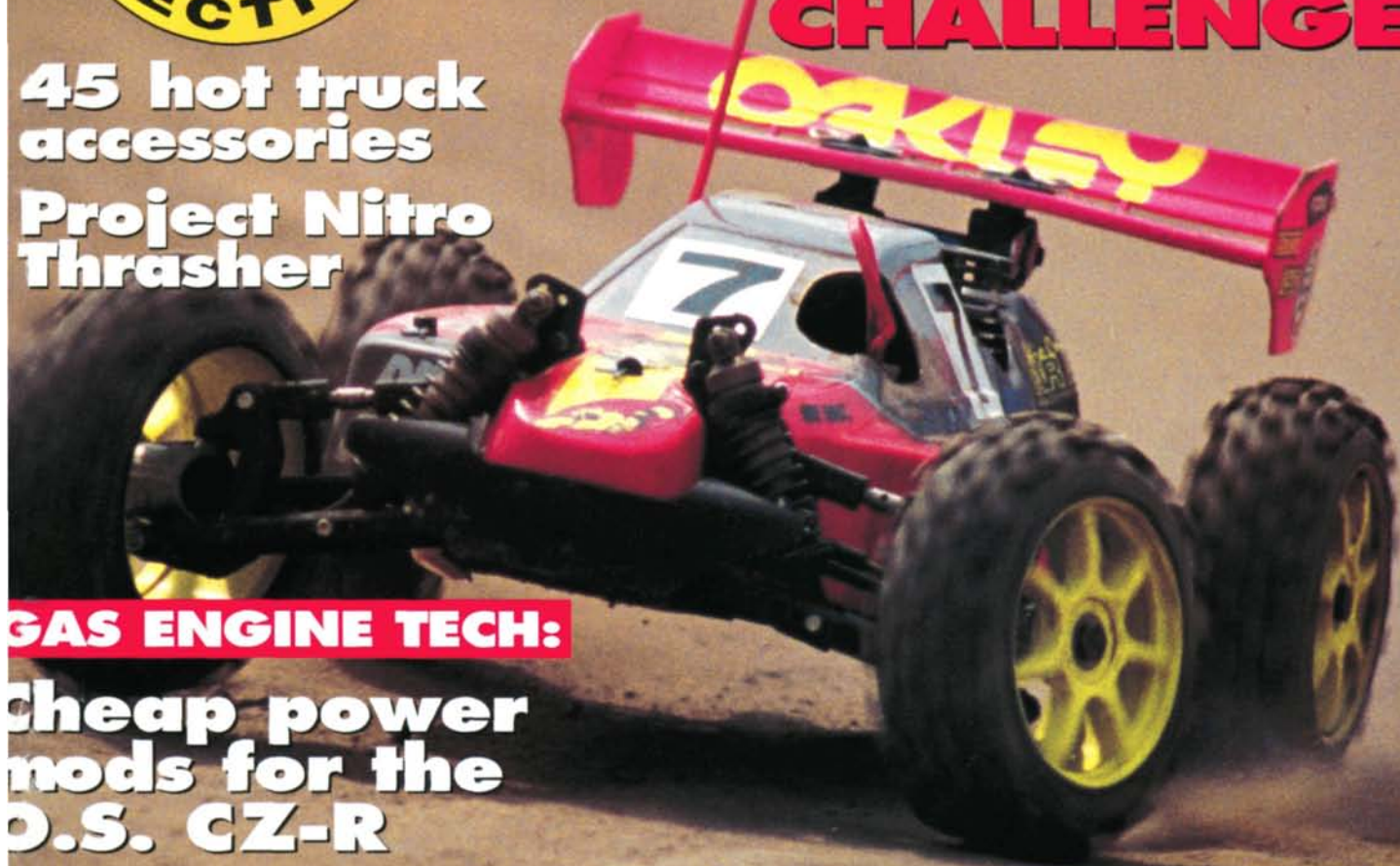


45 hot truck accessories

Project Nitro Thrasher

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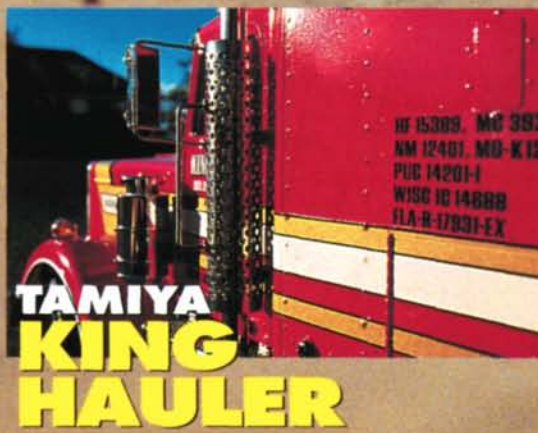
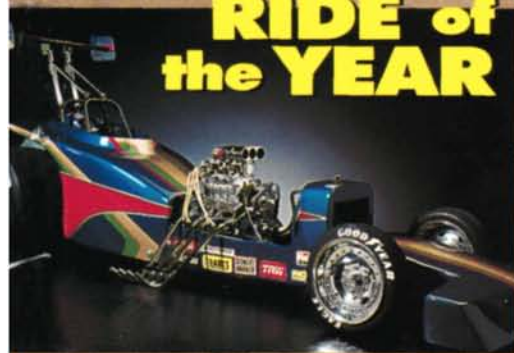
Smokin' Action



GAS ENGINE TECH:

Cheap power mods for the O.S. CZ-R

READER'S RIDE of the YEAR



2 budget bashers!
p. 52

USA \$3.95 CANADA \$4.95



01



**INTERCONTINENTAL
EXPRESS**

2054

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On the cover: action at the Kyosho World Challenge. (Photo by John Huber.) Inset, left: Ed Proctor's awesome Altered. (Photo by Walter Sidas.) Inset, right and this page: Tamiya's King Hauler. (Photos by John Huber.)

EDITORIAL

COMING ATTRACTIONS, '94-STYLE

Here are my predictions for the coming year: gas prices will stabilize; President Clinton's health care plan won't cost me an extra cent and I'll receive better coverage, and I'll get that long-awaited new computer for the office. In the real world (of R/C cars, of course), my expectations are a bit higher.



I expect that, by the end of '94, every household in America will own at least one R/C car. How will this be possible? You see, all the hobby-shop owners will band together in the joint promotion of R/C car racing. Every Sunday, shop owners will set up temporary tracks and hold organized competitions for local racers. Of course, spectators, having seen how much fun the participants have, will line up at the hobby shops' counters to get in on the fun themselves.

Also, I predict that monster trucking will re-emerge as a hugely popular segment of the hobby. Every manufacturer will jump on the bandwagon to produce after-market parts for Tamiya's Clod Buster and Kyosho's USA-1. MRC's World Scale will become huge, and tracks all over the country will create special racing classes just for these electric-powered monsters. Maybe some of my expectations are a bit high, but my guesses are based on last year's trends, so I say they're educated ones.

Of course, we at *Car Action* will continue to do our best to support and report on our favorite hobby/sport. We'll continue to support both electric and gas racing, and we'll do our best to provide you, our readers, with even more of the product reports and how-to articles that you've come to expect and enjoy. In fact, we've just completed our '94 Editorial Calendar, and, boy, do we have a gaggle of cool articles coming your way! So don't miss out!

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LETTERS

WRITE TO US! We welcome your comments and suggestions. Letters should be addressed to "Letters," *Radio Control Car Action*, 251 Danbury Rd., Wilton, CT 06897. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

IN THE FAST LANE

I'm interested in getting a catalogue of R/C drag-racing cars and parts. Can you give me some addresses of companies that have catalogues?

JASON OVERCASH
Kannapolis, NC

Jason, you can get more info on R/C drag racing from Chris Fine at Fine Design, 2 North St., Middletown, NY 10940; (914) 342-5102. Good luck.

JH

10T OR 10ST FOR ME

I saw the truck of my dreams—the RC10T—in your magazine. I've finally saved enough money to buy it. When I looked around for the best price, I saw the RC10ST. What's the difference? Thanks for your time, and keep up the good work.

MATT PETROWSKI
Bay City, MI

Basically, Matt, the RC10ST was designed for the entry-level racer. The 10ST lacks a few of the trick items that are featured on the Team truck, such as hard-anodized, Teflon-coated shocks; light, one-piece wheels; and universal drive shafts. The 10ST comes with a mechanical speed controller, bushings instead of bearings, standard gold-anodized shocks, convenient three-piece wheels (so you don't have to replace your wheels every time you change your tires), a molded tranny brace (instead of the graphite one that's on the Team truck) and dogbones. The RC10ST is a good truck that you can upgrade as you can afford it.

JH

SAVE ME

I've been a subscriber to your totally sweet mag for a long time. I've looked through all the issues, but I've never been

able to find the answer to this question: what does a servo-saver do? Peace.

NICHOLAS HEARTH
Prairie Farm, WI

It's really simple, Nicholas. A servo-saver actually "saves" your servo's internal workings, i.e., the gears and the motor, from shock. It's a relatively inexpensive "insurance policy" that every servo should have. (Replacing servo gears and motors tends to be expensive!)

JH

GASEOUS PLANS

I'm the proud owner of a Traxxas Nitro Hawk. I'm curious about whether Traxxas has any plans for an 1/8-scale gas buggy. Great mag!

BILL BANKS
Westmont, IL

As far as we know, Traxxas doesn't have any plans to make an 1/8-scale buggy, but they do have a ton of other nitro vehicles slated for production. Included in their lineup is a 1/10-scale 2WD nitro buggy, a 1/6-scale behemoth gas buggy and two on-road nitro cars—one 2WD and one 4WD. We'll let you know if any 1/8-scale rumors start turning up.

JH

MAKING THE SWITCH

I own an almost-stock Hawk 2 that I'll be racing soon. What do I have to buy to upgrade my Hawk's suspension to that of a Blue Eagle LS? Also, will Blue Eagle after-market parts work on my Hawk 2? The mag is great.

WILL VAUGHAN
Benton, MS

Traxxas offers a kit that allows Hawk 2 owners to convert their trucks to a Blue Eagle LS without too much hassle. The kit (part no. 1930) consists of Blue Eagle LS rear suspension arms, rear axle carriers, wheels and a few other odds and ends. You'll also need Blue Eagle LS wide front- suspension arms (part no. 1931) and shocks—blue-anodized X-tra long rears (part no. 2761) and blue-anodized

long fronts (part no. 1960). As an option, you can purchase racing tires; you'll also need to get some threaded rod to make turnbuckles. You should be able to get that at any hobby store. JH

A HELPING HAND

I'm writing in response to Markus Widczisk's letter that was published in your September '93 issue. He asked for help in locating an MRP High Roller truck. I believe I can be of some assistance. I have a complete, unassembled MRP High Roller in perfect condition, still in the unopened box. If he's interested, he is welcome to contact me.

SCOTT SUGAHIRO
165 South Verde Dr.,
Ontario, OR 97914-2030
(503) 889-8120

MUCHAS GRACIAS

Hello again! I'm writing with an update about my plea for help that you so kindly published in the September '93 issue. The response from your readers has been fantastic. I received more than a dozen calls and letters about where to get parts and selling partial or complete Assaults. I want to thank everyone who responded.

I especially want to thank Fred Krotz of Naperville, IN, and Doug Kier of Mantua, NJ, who sent me whole cars for free. I never expected that. Thanks also to Stephen Witt of Germany, who sent me parts from across the Atlantic!

I tried to think of a way to repay all these people for their kindness, and here is what I came up with: I'm going to build a second Assault from the parts I now have, and give it to a deserving kid who otherwise couldn't afford to get started in the wonderful world of R/C.

I'd like to thank everyone for all the help. You have the best car magazine going and the greatest readers in the world!

BILL HEHER
Roseville, MI

(Continued on page 158)

VIRTUOUS VENOM



Power Rev R/C Engine Treatment (SO-01) is the "after run" oil for all 2 and 4 cycle R/C engines. A few drops after a day of operation makes them run cooler, faster, and last much longer with less maintenance.

[VENOMOUS TIP: Use Engine Treatment along with Fuel Treatment for Max. RPM Performance!]



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speed operation, it also cleans and lubricates the entire fuel system.



Power Rev R/C 2-Cycle Oil (SO-06) mixes evenly with all types of gasoline to give the best gas/oil mix for your gasoline powered model engines. Improved protection from frictional heat and wear makes your engine run smoother, harder and longer.

[VENOMOUS TIP: Add in Power Rev R/C Fuel Treatment (SO-02) to your 2-Cycle gas/oil fuel mixture for even greater overall fuel performance!]



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[VENOMOUS TIP: Add a drop of Power Glide R/C Bearing Lubricant (SO-04) to all metal parts before applying grease for total, friction-free performance!]



Power Glide R/C Bearing Lubricant (SO-04)

gets extra spin out of bearings, shafts and linkages. The repelling magic of SP-10 eliminates friction and penetrates, coats and lubricates metal surfaces.

[VENOMOUS TIP: Because it's water repellent, Power Glide R/C Bearing Lubricant is your best protection from rust and corrosion too!]



Power Glide R/C Spray Lubricant (SO-05)

gives complete protection from friction in bushings, bearings, shafts, ball-links and any contacting metal surfaces. A quick blast on electric motor bearings boosts power immediately and gives protection for an entire race!

[VENOMOUS TIP: Apply a drop of Power Glide R/C Bearing Lubricant (SO-04) after spraying the part with Power Glide R/C Spray Lubricant!]



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WHAT'S NEW

RCM

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This 1/10-scale gas on-road kit includes a 2-speed transmission; a universal clutch housing with screw-on pinion gears; adjustable front camber; an aluminum radio plate; aluminum, oil-filled shocks; anti-roll bars; and a ball diff. **Part no.—8061; price—\$399.95.**

RCM, 4715 N.W. 157th St., Ste. 204, Miami, FL 33014; (305) 620-0005.



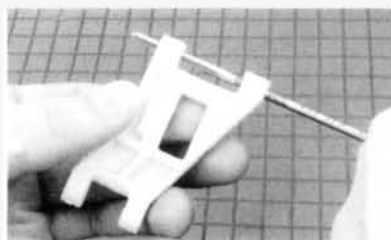
DYNAMITE

Pro Pin Reamer

Dynamite's new Pro Pin Reamer gives racers a competitive edge in suspension setup. With the action of a drill bit, the Pro Pin reamers have a cutting edge that scrapes away any plastic flashing or dirt that could bind the

action of a suspension-arm pin. The 0.127-inch-diameter Pro Pin fits all Losi and Associated cars and trucks (and any other vehicle that uses 1/8-inch hinge pins or kingpins); the 0.1285-inch size is for RCPS titanium hinge pins.

Dynamite; distributed by Horizon Hobby Distributors, 4105 Fieldstone Rd., Champaign, IL 61821; (217) 355-9511.



VANTAGE ENGINEERING

Model 25A Discharger

This is the first low-cost discharger that's designed to maintain an average 25A discharge from a 6-cell pack. A large, easy-to-see LED indicates when discharging is complete. The Model 25A is powered directly from the pack being discharged, and it's an excellent alternative to homemade "light bulb" dischargers.

Part no.—DD100; price—\$69.

Vantage Engineering, 681 Main St., Waltham, MA 02154; (617) 894-8694.

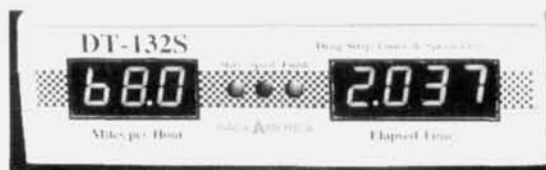


KYOSHO Tracker

Kyosho's new 2WD Tracker gives beginners more monster for their money! Combining high-quality engineering (based on the Ultima series of racers) with a low price, it's durable enough for demanding off-road action, yet it's easy for beginners to drive—the perfect entry into monster-truck racing! Its features include a high-torque, 550 motor; a heavy-duty tranny and speed controller; oil-filled shocks; a Kelron chassis; adjustable gearing; high-grip tires; a 4W, independent, double-wishbone suspension; and a light, clear Lexan Chevy truck body.

Part no.—KYOC0215; **price**—\$169.99.

Kyosho/Great Planes Model Distributors, P.O. Box 9021, Champaign, IL 61826; (217) 398-6300.



RACEAMERICA Drag Race Timing System

The battery-operated DT132S Drag Race Timing System reports elapsed time to 0.001 second and actual speed to 0.10 mph. Designed for use in streets, parking lots, or race tracks, it can be easily upgraded with the Dual Lane Drag Racing Light System when you're ready for head-to-head competition.

Part no.—1500A; **price**—\$429.

RaceAmerica Inc., P.O. Box 3469, Santa Clara, CA 95055; (408) 927-6064.



PARMA Stray Cat Body

Parma's new Stray Cat Body is a direct fit for the Schumacher Boss Cat. It's aerodynamically correct in every way, so it allows maximum speed and stability. Comes with Lexan belt covers.

Part no.—10378; **price**—\$15.

Parma International/PSE, 13927 Progress Pkwy., North Royalton, OH 44133; (216) 237-8650.

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TRINITY® Evolution 10

MAGIC TRICKS

by Joel "Magic" Johnson®
current IFMAR World Champion

Well, gang, it's column time again, and while you're reading this, we'll be firmly in the middle of the indoor season. Throughout most of the country, the 1/10-scale cars are put away, and out come the 1/12-scale cars to do battle on indoor carpet roadcourses. If you race EV10s on-road indoors, however, have we got hop-up parts for you!

When racing indoors on carpet, the most common setup problem is too much bite, which makes the cars roll over and dart all over the track while still not having enough steering to get through the tightest parts of the track. We have come up with two new chassis items for your EV10 that will really make it killer on a carpet track.

The first is our new "Short Track Chassis." This graphite chassis features an adjustable wheelbase so the car can be shortened up to turn in tighter, or made longer for stability on bigger, faster tracks. We've added battery slots up the middle to lower the batteries, which lowers the center of gravity, and this keeps the car from rolling in the turns. Having a higher center of gravity is good for asphalt racing, because you usually need all the traction in the turns that you can get. On carpet, this just makes your car traction-roll in the corners.

This new chassis also comes with dual nerf wings to protect your tires and axle in case of contact with the wall. We have also added tabs to the sides of the chassis so the receiver and speed controller can be laid down to further lower the center of gravity.

To dial in the front end of your EV10, we have a new "Wide Front Axle Plate" that increases the front track 0.3 inch. This axle plate will increase stability and make the car less darty in the turns. The wider front axle will also make your car a lot more stable on bumpy tracks and tracks with very high bite.

EV1034—
Short Track EV10 Chassis\$79.95

EV1035—
Wide Front Axle Plate\$20

In closing this month, I would like to thank everyone at Trinity for the super motors and batteries that allowed me to be the top qualifier and winner of the first Main at the IFMAR Off-Road World Championships!

Until next time,
Joel "Magic" Johnson®

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WHAT'S NEW

PROTOFORM

'93 Ford Ranger Body

Molded of crystal-clear Lexan, this body is based on the hot '93 Ford Ranger. This ROAR-legal body fits the LX-T chassis like a glove, and it fits the

Traxxas LS-II with minor body-mount mods. It features a strengthened area around the rear body mount, an add-on rear spoiler and a molded-in front valance that prevents dirt from entering the chassis.

Part no.—1506; price—\$19.95.

Protoform, 5455 Southwestern Blvd., Hamburg, NY 14075; (416) 646-7638.



TAMIYA

Blitzer Beetle

Tamiya's Blitzer Beetle is a low-cost, high-performance 2WD vehicle that's designed and priced for novice drivers, but it has what it takes to go the distance with the big boys. Its features include a

rugged, "big-tire"-type chassis; an independent, double-wishbone suspension; specially designed truck racing gears; and oil-filled shocks all around. It comes with a 540 motor and a 3-speed, forward-and-reverse, mechanical speed controller.

Part no.—58122.

Tamiya America Inc., 2 Orion, Aliso Viejo, CA 92656; (714) 362-2240.



MUGEN

Race Case

Mugen's Race Case is made of a super-tough, multicolored nylon material that resists tearing and is easy to keep clean, even under the worst dirt-track conditions. Its super-large interior is big enough to handle any 1/8-scale buggy or truck;

two pockets on the outside can carry parts and tools, and a large inside pocket can hold a pistol-grip transmitter. Two adjustable carrying straps allow you to carry the Race Case either like an attaché case, or, by lengthening the straps, over your shoulder. It's available at hobby shops across the country.

Part no.—2001; price—\$41.99.

Mugen USA Ltd., 910-D Brandy Creek Dr., Mechanicsville, VA 23111; (804) 730-0008.





INSIDE SCOOP

by CHRIS CHIANELLI



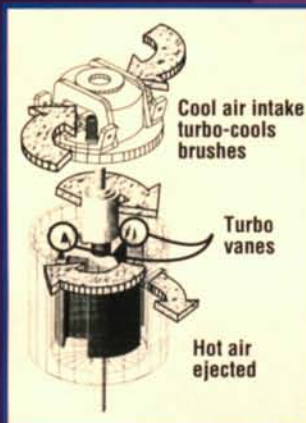
IN SEARCH OF FUN AND GLORY, 'CAUSE LIFE'S TOO SHORT TO BE A SHEEP!

SONIC BOOM

Cooler running means more power; it's as simple as that. Reedy's new Sonic, Mach I and Mach II motors all feature the new Turbo Vane cooling system. As the armature spins, this system draws air in over the brush hoods (cooling the brushes)

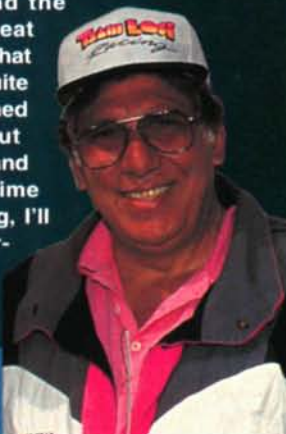
and into the end bell. Small, "turbo" vanes on the armature then draw the cool air downward while ejecting hot air through small vents in the motor's can.

The Mach I is a ROAR-legal stocker and the Mach II is an "outlaw" stocker. The new Sonic hand-wound modifieds feature commutators with larger diameters and "lay-down" brushes.



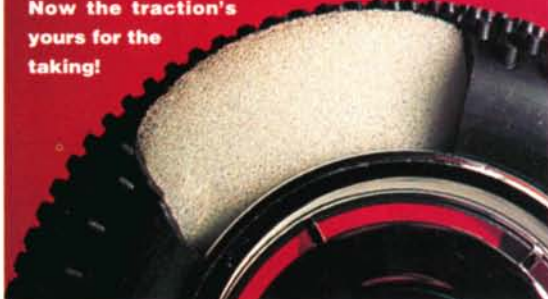
TEAM LOSI SEEKS ROAR VP

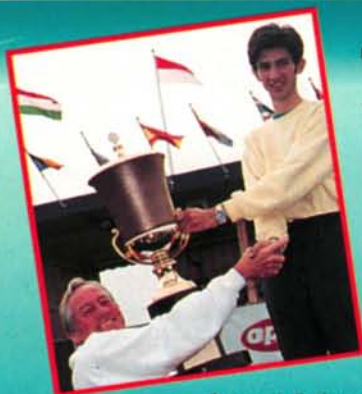
Losi president Gil Losi Sr. has thrown down the gauntlet: he's challenging incumbent Gene Husting, of Associated Electrics, for the ROAR vice presidency this coming election. Both can be considered the patriarchs of R/C car racing, and both have witnessed firsthand the metamorphosis of our great hobby/sport. I understand that their points of view are quite different. If you're concerned about the future, seek out copies of their platforms and get out there and vote. Time and cooperation permitting, I'll try to get condensed versions of their views for publication here in the "Scoop."



DIRT PILLOWS

Ya'll know that soft tires, like Pro-Line's gushy XTR series tires, are the only way to go on hard-packed off-road tracks. But to get the most grip from them, you gotta pack them with foam inserts to keep 'em in shape. To keep the cost of being competitive as low as possible, Pro-Line now includes foam inserts with every pair of XTR tires—free of charge! Now the traction's yours for the taking!





Twenty-year-old Lamberto Collari has once again captured the IFMAR 1/8-Scale World Championship — for the third time in a row! All of the world's best gas drivers went to Gothenburg, Sweden, on

August 5 through 10 to battle for the title, but Collari's Nova Rossi-powered BMT Austin Light took the pole position and ran away with the hour-long A-Main event. Talk about confidence! During qualifying, Italian team manager Maurizio Calvari was quoted as saying, "If Collari's car runs well, he will be World Champion once again; his magic hands takes care of the rest."

FORZA ITALIA!

Wheels for the World



So you want a trick-looking truck, huh? Does your World Scale rig need that finishing touch to make it stand apart from the rest? Well, new from JPS are these sharp-looking 6061 T6 billet-aluminum wheels for the MRC Thunder King and Baja King. They'll turn your truck into a mega-major cruiser. The wheels are available in 15 styles, such as the Deluxe Star, Tri-Blade and the ever popular Centerline Champ 500-style wheel shown here.

The wheels can be mounted without any modification, and the offsets are the same as those on the stock wheels. They're especially for the heavy-duty, rugged, drop-it-off-a-cliff-type World Scale trucks, so JPS opted to make these wheels slightly thicker than their usual ones. These hot-looking wheels sell for \$75 a pair and are the perfect finishing touch for your truck.

If you wanna know more, contact JPS Custom Wheels, P.O. Box 746, Lakehead, CA 96051; (916) 238-8122.



Winning is What Separates Champions From Everyone Else. And We've Won It All!

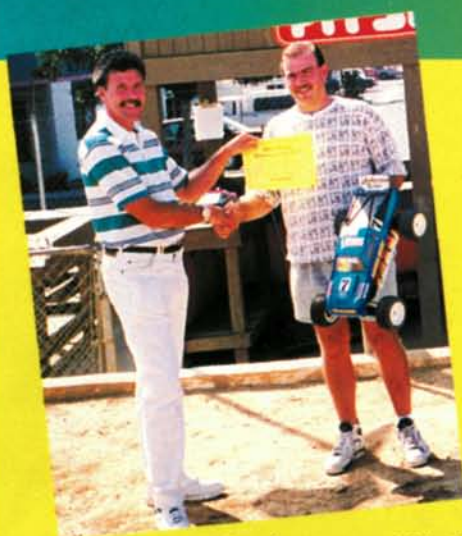


- ☐ IFMAR 1/10th, On-Road Modified World Championship - Joel Johnson
- ☐ ROAR 1/10th, On-Road, Modified National Championship - Joel Johnson
- ☐ ROAR 1/12th, On-Road, Modified National Championship - Joel Johnson
- ☐ 4-Cell Modified Winter Nationals Modified Championship - Mike Blackstock
- ☐ U.S. Oval Masters Modified Championship - Mike Blackstock
- ☐ ROAR 1/10th Speedway Modified National Champion - Ernie Bucsi

Trinity Team Pushed battery championships are all in super-competitive national and international modified pro-class racing, not in stock or regional events.

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World Scale... World Class

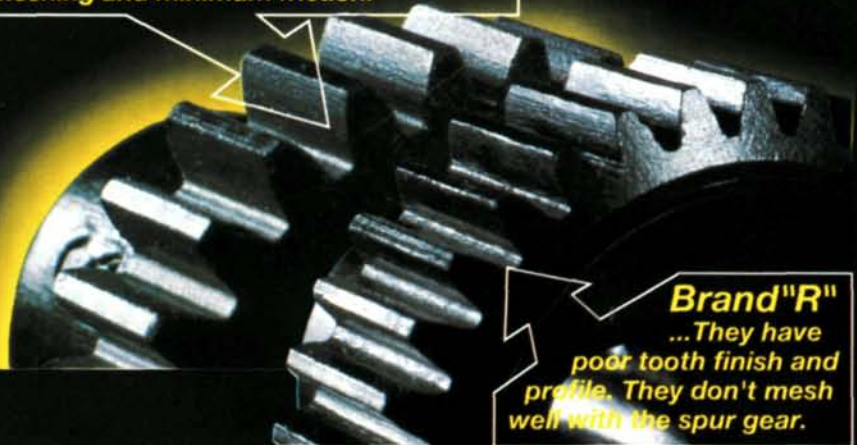
By now, you've probably heard a lot about MRC's World Scale—you know, the electric-powered off-landers that are just a little larger than 1/8 scale. Well, the question I'm most frequently asked by would-be World Scale warriors is: "They look like lots of fun, but do they race 'em?" They sure did this past September at the MRC/Trinity Dash for Cash race (held at the Ranch Pit Shop in Pomona, CA).

Many of the best drivers in the country showed up to give World Scale a try—and to win some cash! In the Unlimited Truck Class, Team Losi's Jammin' Jay Halsey, (above photo), driving a Baja King, took first place (and a cool \$2,000). Peak Performance owner Rick Hohwart (shown at right), pocketed a win and a grand in the Unlimited Buggy Class. Overall, more than \$6,000 was awarded. It's interesting to note that not one of the World Scale vehicles was sidelined because of parts breakage. Shown here is MRC's Frank Ritota handing over the cash.



ZeroGravity™ Pinions

Trinity Pinions...Ours are precision machined from 6061 T-6 aircraft aluminum and teflon impregnated for smooth meshing and minimum friction.



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...They have poor tooth finish and profile. They don't mesh well with the spur gear.

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LOOKIN' SLEEK...

AT THE STADIUM

The Diamond Back is Protoform's new 1994 truck body. Modeled after the '94 GMC Sonoma, the Diamond Back was designed to fit the popular Associated RC10T truck chassis. It features an add-on rear spoiler and a molded-in front valance to keep dirt out. It conforms to all ROAR truck body-rule specifications. Contact PROTOform, 5455 S. Western Blvd., Hamburg, NY 145075; (416) 646-7638; fax (416) 646-2476.

Here's One...



...To Watch

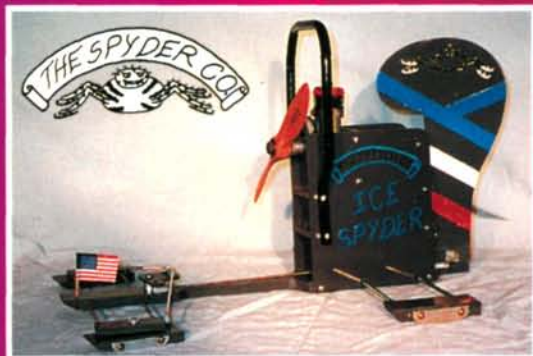
Considering Trinity's tremendous on-road success this past year with the Evolution and Revolver cars, the new Trinity/Horizon Revolver 12-4ce (carpet edition) is sure to be a major contender the season. Like other Revolver cars, this 4-cell version features Reactive Caster™ front suspension and the Trinity Pro Diff. Unlike other Revolvers, the new 12-4ce has cells positioned for optimum front-to-rear weight bias, new T-bar material with optional tweak-screw positions and a shorter wheelbase for more aggressive steering on tight indoor tracks.

Here's a really nice touch: the kit will include building and set-up tips by such notables as Joel Johnson, Mike Blackstock and car builder/designer genius Jim Dieter. The Revolution 12-4ce is exclusively distributed by Horizon Hobby Distributors, 4105 Fieldstone Rd., Champaign, IL 61821.

The Ice Spyder

Oh...here's something quite different: the Ice Spyder (patent and trademark reg. no. 327762). For electric motors or .09 to .21 glow power, the Ice Spyder, which features spring-steel suspension, is steered by the front runners and the rudder. A wheel-conversion kit is included so, if you want to, you can transform your Ice Spyder into a land crab. If the cold weather is making you numb and dumb, it's time for...the ICE SPYDER! YAAAY!! Actually, I think this thing really is cool; in a way. It's great on snow too!

For more info, contact The Spyder Co. (Home of the Ice Spyder!), P.O. Box 7, Newton, NH 03858-0007.



READERS' RIDES

"Readers' Rides" is our way of recognizing the unique, innovative—and sometimes bizarre!—vehicles that our readers have created. Send us a sharp, uncluttered, well-exposed color photo of your car or truck (no Polaroids, please!), along with a brief description, to Readers' Rides, R/C Car Action, 251 Danbury Rd., Wilton, CT 06897. If the Ayatollah of Radio Controlla chooses your photo, you'll receive a 6-month subscription to Car Action, or an extension of your existing subscription. You'll also be eligible for the third annual "Reader's Ride of the Year Contest" in the fall of 1994. Write your address and phone number on your letter and on the back of each photo you send, in case we need to contact you.



TAMIYA TWOSOME

These sweet-looking machines belong to our local buddy, Paul Onorato of Ridgefield, CT. The car on the left is a basically stock Tamiya 959 Porsche. Paul equipped it for the on-road scene by adding a set of after-market slicks and a Novak 610RV. The Tamiya King Cab on the right has been modified with Trinity Power shocks, a Speedworks 427 motor, a Thorp diff, Robinson Racing cluster gears and a Futaba MC112B ESC. Nice rides, Paul! Ridgefield is right down the street; maybe we'll see you at the local track.

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ROAD REBEL

This awesome ride was sent to us by Bernard Gelinas of Montreal, Quebec, Canada. It's a Lynx II that's equipped with a Tekin 411P ESC, a Tekin mini-receiver, a Cannon ROAR '91-legal stock motor, a graphite axle, True Turn hubs and BRP diff rings. And get this: he created the stunning paint job himself with spray cans. Not too bad, Bernard!

.....



hasn't been made into a truck or a van." Seth's tank is painted in the mustard-yellow motif that the German army's tank division (led by General Erwin Rommel, aka The Desert Fox) used in Africa during WW II. The tank is stock with a Futaba ESC and 4-channel radio. Well, Seth, here you go; your tank is alive and in color in R/C Car Action.



YOSEF'S RIDE

This mountaineer, Yosef, is the Appalachian State University mascot, and he doubles as the demo-vehicle driver for Pastimes Hobbies of Boone, NC. The truck is based on an Ultima chassis, and it incorporates a Powerline 12-turn, triple-wind motor and a Novak ESC. As Kevin Downs writes, "At a halftime show, we called three seniors from the audience and had them drive the vehicle in a mock race. High performance, a slick floor and inexperienced drivers made for a fun experience." Per your request, Kevin, we'll give a 6-month subscription to a suitable charity. Thanks.

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DESERT FOX

Seth Tastad of Laramie, WY, sent us this photo of his Tamiya King Tiger tank because he has "never seen a tank in Readers' Rides before that



HEAVY METAL

Gary Shore of Marina, CA, sent us this photo of his highly modified "Heavy Metal" Clod Buster. Gary's truck has an aluminum chassis with a lift kit, an aluminum steering assembly

and a three-shock mount kit with Kyosho Long Gold shocks. Other modifications include a Novak 610RV, a Futaba S9302 steering servo, Speedworks Monster Mash motors, Sees aluminum wheels, a Parma Hemi motor, and that's just the beginning! Gary also added some homemade items, such as a tarp on the bed, side-mirrors and grab bars.

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BLACK BEAUTY

This sharp photo came from Sid Garr of Davenport, IA. Sid painted his Yokomo Honda NSX in a classic black scheme using PPG automotive paint (with flex additive) by brush. The car is powered by a Trinity tri-rotor modified motor with help from a Novak 610 RV ESC. Full ball bearings throughout the car help it get on its way smoothly. Pretty impressive, Sid.

• • • • •

A LOYAL FAN

Here's a photo of die-hard Richard Petty fan Devon Bliss of Janesville, WI, getting his Associated 10L SS body signed by the man himself. The car is equipped with a Novak 410 MXC ESC, a B&R Buckshot motor and Team Smooth 1400 SCRs. It's all controlled by a Futaba 3PB PCM radio. Other mods include Tecnacraft aluminum wheels, titanium tie rods and a Cheetah Ultimate front end. Devon painted the body.



JUST DO A WHEELIE

Steve Cockburn of Dover, DE, sent this photo of his winter project. Steve spent four months scratch-building this ATV. Thanks to his local hobby shop—Hobby Works—he was able to come up with all the parts that he needed from Futaba, Royal, Andy's, Pro-Line, Tamiya, K&S and Autographics. It looks wild, Steve!



• • • • •



GO IN THE SNOW

The shot of this wild Reader's Ride came from Tim Pettman, of Champlin, MN. Tim has been working on this Polaris XLT Indy snowmobile replica—which is roughly 2 feet long—for four years. The snowmobile is constructed of fiberglass, aluminum and brass, and the detail is 100 percent accurate. It has both front and rear working suspensions, and power is supplied by a Trinity modified motor, a Novak 828 ESC and an 11-cell battery. Lights on both the front and the rear allow him to drive it at night. According to Tim, the snowmobile has an estimated top speed of 20mph, and it cranks out unbelievable rooster-tails of snow. A .21-powered 'mobile is in the works.

TROUBLESHOOTING

by JOHN HUBER

If you have a technical problem that your hobby shop or racing friends can't resolve, give us a shout at Radio Control Car Action, and we'll see if we can chase down an answer for you. Questions should be of a technical nature and should be addressed to Troubleshooting, Radio Control Car Action, 251 Danbury Road, Wilton, CT 06897. We regret that, owing to the tremendous number of letters we receive, we can't respond to every one.

Tanks for the Memories

I recently bought a Traxxas Nitro Hawk. I broke in the engine properly and was very happy with it. Shortly after the engine had been broken in, it would stall when the fuel reached the point at which the fuel-tank pieces connect to each other. It was as if there wasn't enough pressure in the tank because there wasn't any fuel in the line. No matter how long I pumped it, no fuel would go into the carburetor, and I had to completely fill the tank with gas before it would start again.

I asked the guy at the hobby shop, and he said that maybe there was a split in one of the lines, so I checked it and sealed the ends with silicone. No luck;

it still did it! Soon after that problem, it wouldn't start at all, and there was fuel in the carburetor. It isn't flooded. I've tried three glow plugs, and I'm positive the problem isn't the glow-plug igniter! I've never run

my truck in the dirt, I've never run it too lean, and I use 20-percent nitro fuel. Please help!

It just turns over; it won't start.

Paul Kenna, Enfield, CT

Wow! You've tried just about all the options! Here are a few more ideas: first, rip the tank out of the truck and wash it. Get fresh fuel line and attach it to the pressure fitting. Fill the tank with water, close the lid and blow into the pressure line. Water should flow freely from the fitting on the tank. Now plug the fitting and keep blowing into the pressure line; you shouldn't be able to blow much longer. If there are any leaks, the water will seep out. If it is good, dry and re-install it.

Next, completely disassemble the carb. Look for particles in the needle valve that might clog the flow. Clean all the parts, and reassemble it. Attach a piece of tubing to the fuel nipple on the carb, and blow with the carb closed. You should be able to hear air passing by the low-end needle. Now open the carb. More air will escape through the high-end needle. Put everything back together using new fuel line, and that should do it! Good luck.

Gritty Bearings

About four months ago, I bought a Traxxas Hawk II. Since then, I've upgraded it with ball bearings, a graphite chassis and a pro suspension. Just recently, the ball bearings in the rear stub housings and the front wheels started to make a grinding noise and run roughly. I tried to clean them out with WD-40, but that didn't help. I was afraid that they had suffered permanent damage, so I replaced them with old bushings. Can you please tell me how to clean them properly? Your help would be greatly appreciated.

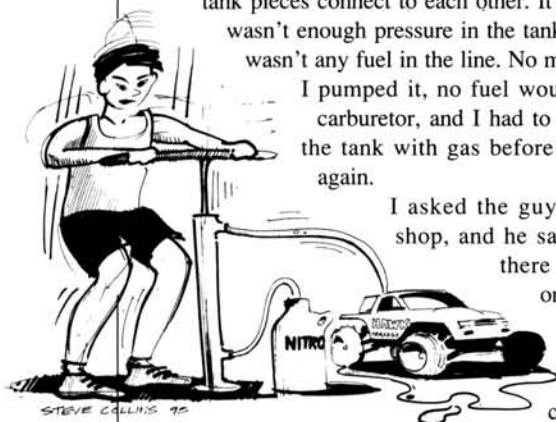
Ken Ulibarri Jr., Barstow, CA

The first thing you need to get is a can of motor spray. Clean one of the bearings with the spray, and look closely at the side of it. On each side of the bearing there's a shield; it protects the balls inside. Look

around the edge of each shield for a break in the circlip that retains it. If you find the break, you can remove the shield. Carefully use a sharp X-Acto knife to lift the circlip.

Don't lose it! With both sides removed, you can blast every last bit of grime out of the bearings. When they're clean, check to see whether they're smooth or gritty. If they're still gritty, they're shot. If they're smooth, lube them with a high-quality lube (a little thicker than WD-40), and replace the shields.

If you can't remove the shields, you can still spray them, but it will be difficult to remove all the grime.



Out of Control Radio

First, let me say that I think you have a killer mag; I've been looking to you for answers since I began in this wild hobby three years ago. I have a problem that has me completely stumped and frustrated.

I have an RC10, a King Cab and a Mudblaster. I run the Mudblaster and the King Cab on the same MRC radio (at different times, of course) and have absolutely no problem controlling them. I run the RC10 on a Futaba Magnum Junior, and until a week ago, I didn't have a problem.

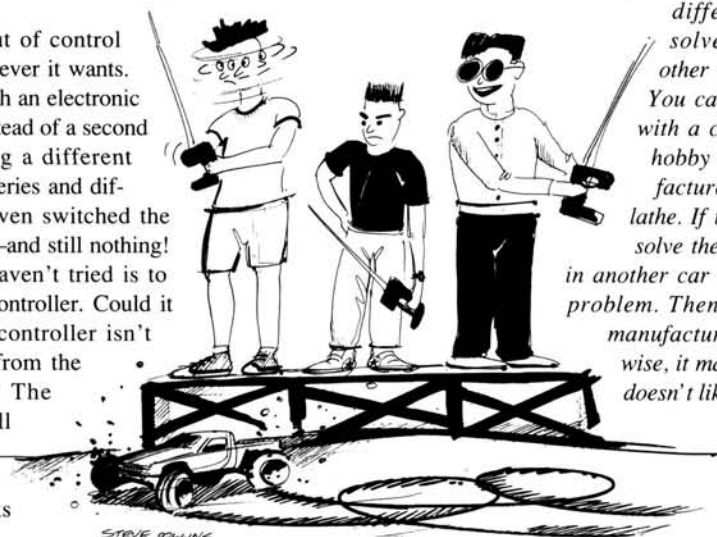
Now, it goes out of control whenever and wherever it wants. I bought a radio with an electronic speed controller instead of a second servo. I tried using a different radio, different batteries and different crystals. I even switched the receiver in the car—and still nothing! The only thing I haven't tried is to change the speed controller. Could it be that the speed controller isn't sending the juice from the battery properly? The steering works well until I go forward or backward; then it freaks

out from side to side. I need help with this, big time! Thanks, and keep up the good work!

Mark Lawson, Worcester, MA

Mark, you're using a low-frequency speed controller. It pulses power to the motor at a rate of 60Hz. After hours of use, the arcing of the power will wear on your motor's comm. The more worn and dirty it becomes, the more it arcs, and so begins a vicious cycle. First, try a

different motor. If that solves the problem, your other motor needs cleaning. You can do a temporary job with a comm stick, or have a hobby shop or motor manufacturer cut the comm on a lathe. If the new motor doesn't solve the problem, try the ESC in another car to verify that it is the problem. Then send the unit to the manufacturer for repair. Otherwise, it may be that the ESC just doesn't like your RC10.



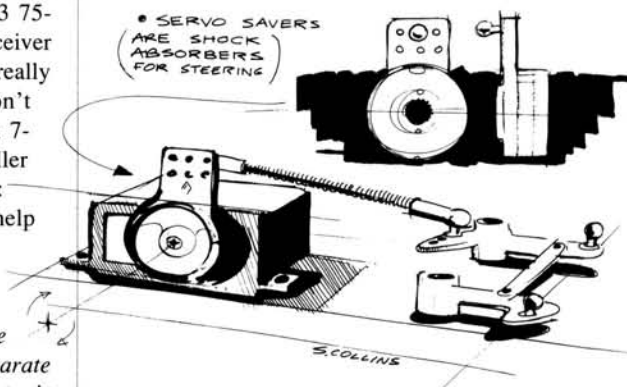
Save These Servos

I recently bought and assembled an RC10CE. I put a Novak 610-RV ESC and an Airtronics 92123 75-band AM receiver in it. My problem is that the receiver has a BEC connection, and the ESC doesn't. I really want the BEC connected; can you help? (I don't know if it will help, but I also have a DuraTrax 7-cell, 1500mAh pack, an Avenger AV2R controller and a 94102 servo.) I have one other question: what exactly is a servo-saver, and how can it help me? Thanks!

Eric Harashevsky, Sunland, CA

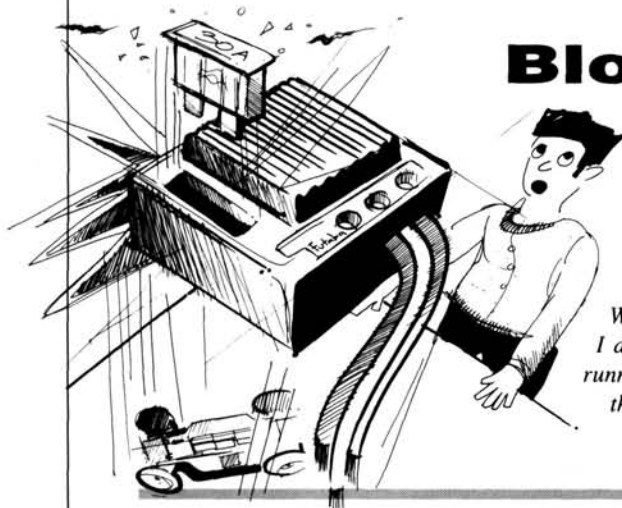
Eric, the ESC you bought delivers power to the receiver for radio function. You don't need a separate receiver pack (hence, battery elimination). You won't need the radio's BEC connection; in this case, the ESC will do the job. Just don't use both, or damage will result!

As for the servo-saver, it does just what the name implies. Inside a servo is a series of gears that turn to aim the wheels. Under most driving conditions, there



isn't much stress on the servo gears. When a wheel hits a board or another solid object, the stress travels straight to the servo. In most cases, the gears become stripped, knocking you out of the race. A servo-saver allows the wheels to turn without transferring all the shock to the servo. Every car should have one!

Blown ESC



I just bought an RC10CE with the Futaba MC-210CB, and it requires a 30A fuse. I use an Associated 7-cell (1400mAh) battery. The fuse always blows after I first start to drive it. I also use a Reedy Mr. S 12-turn double. Can you help?

Matt Kail, San Antonio, TX

Whoa there, Matt! A 12-turn motor is way too much for the MC-210 CB. I don't recommend anything below a 15-turn. If the ESC is getting hot running forward, or the fuse is blowing, you're overdoing it. I recommend that you get a better ESC or use a milder motor. Whatever you do, don't use a higher-amp fuse; it will damage the ESC!

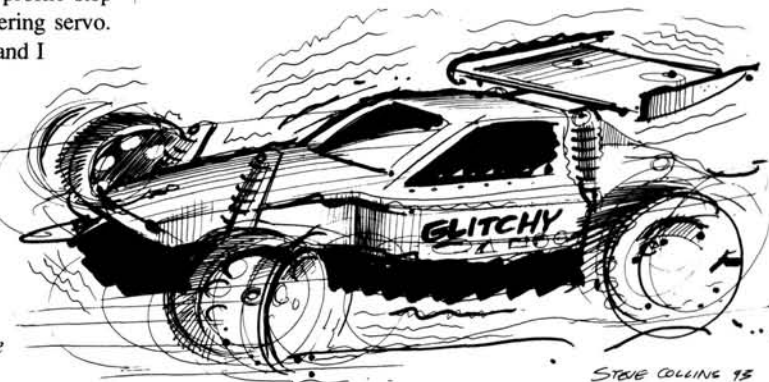
Insufficient Servo

Maybe you can help me. I just bought an RC10T and a Speed Gems Sapphire motor. I have a 610-HRV reversible speed controller. The truck has low-profile step spikes on the rear tires and an S133 micro steering servo. Here's the point: when I'm at the track racing and I turn my truck, it spins out and barely turns.

Chris Jung, Houston, TX

I see your problem right away. The Futaba S133 is a glider servo for airplanes. It's very small and light, but it isn't nearly strong enough for a car or a truck. You should be using at least an S9301 or better—something with more power. In a 2WD truck, you need a fast, strong servo. I recommend the

Airtronics 94151, or any servo that produces at least 40 oz.-in. of torque.



Wet Bearings

The other day, my sister dropped some water on my very expensive Twister motor. What can I do to solve this problem? I don't want this motor to be damaged. So, I would appreciate any help you can give me. I also want to

know how to make my motor run cooler. I race with a Losi Junior Two on an off-road track. I use a Twister Black Max 13-turn triple motor. Your magazine is great.

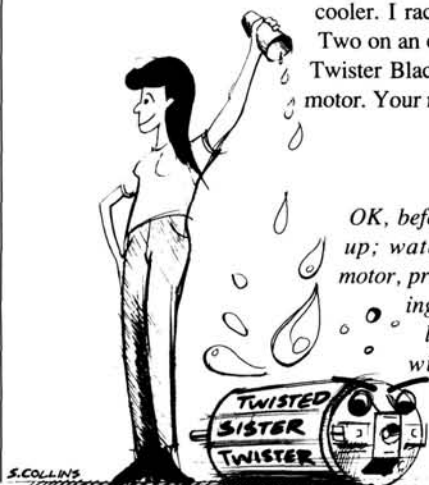
John Fezesiades, Piraeoys, Greece

OK, before you panic, listen up; water won't hurt your motor, provided that the bearings have been properly lubricated. The oil will repel the water and prevent it

from rusting the bearings. You'll need to dry the motor, so spray it with motor spray; then re-oil the bearings, and you're in business.

Now, if the bearings weren't lubed when the water was spilled on the motor, they may have rusted. Ideally, you should replace the bearings, but you can try soaking them in a light oil such as WD-40. After soaking, spin each bearing, spray it with motor spray and oil it. Repeat this process until each bearing spins freely and quietly.

The simplest way to keep your motor cool is to use a higher gear ratio, i.e., a smaller pinion gear or a larger spur gear. With a higher ratio, the motor will strain less, and it will run cooler. Another method is to install some type of heat-sink device. Several companies, e.g., Trinity and Holeshot, make heat sinks that clip onto the motor's can. Litespeed makes a version of its Litesink heat-sink motor-mount plate that fits the Losi Junior Two. Any of these options will help keep your motor cool.



Highway Hog



by JOHN HUBER



TAMIYA

K
H



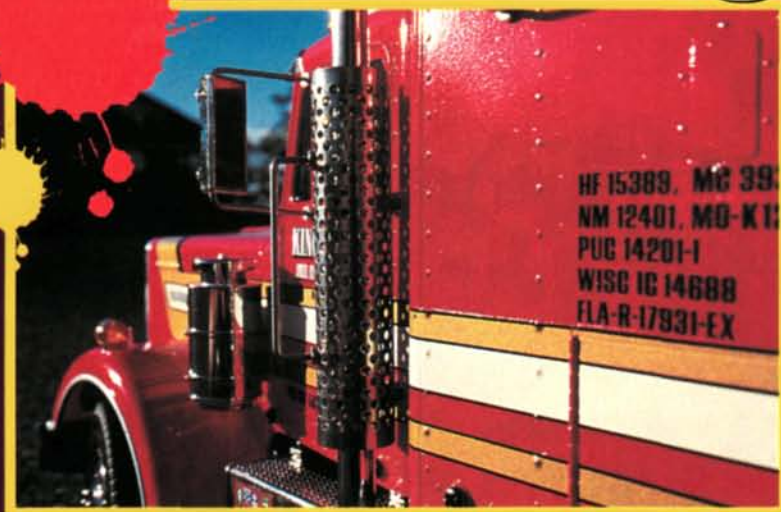
PHOTOS BY JOHN HUBER

ING HAULER

EVERY COUPLE of years, Tamiya* builds a model that blows everyone away. It isn't a beginner car to run in the grass or a full-blown race machine, but an ultra-detailed working model with more features than you can believe. The King Hauler—a 1/14-scale model of a classic, long-nose big rig covered with chrome and metal details—is the model for 1993. Tamiya didn't stop with the

cab; they also make a 34-inch aluminum trailer. When Frank asked me to do the review, I said, "Ten-four, good buddy!"

Crowning the King



added the details. I painted the door locks and the wheel opening trim with no. 1146 silver. Then I applied the decals and rubbed them down. If you're careful, the rivets will show through the decal. Be careful around the hinges; make sure to rub down all the edges. Spray everything with no. 1261 Gloss Cote. This seals all the decal edges and really adds to the shine.

When that was dry, I painted the windshield trim and the air-filter tubes with no. 1149 flat black, and I

used no. 1166 flat brown for the seats and dash. After the paint has dried, bolt on all the handles and chrome details. Scrape away the paint where the chrome pieces glue to the cab as well a little chrome on the pieces. Tamiya even includes a real screen grill!

Take your time painting the Hauler; it would be a shame to mess it up. If painting isn't your favorite thing, see if you can get an auto-body shop to do it. You might get a good deal on a great finish!

CONSTRUCTION

As with all Tamiya cars, the instructions are topnotch. The construction process is broken down into 54 steps; to the side of the page, there's a list of parts for each step as well as a picture. Some steps require that you build more than one assembly. The King Hauler isn't hard to assemble, but it takes a while, so don't rush. You'll be sick of gluing on tires by the time you get to the fourth one; too bad there are 10 on the cab and eight on the trailer!

If you're considering bearings, install them now. There are 40 bushings in the cab alone, and replacing them later would be a pain. The truck requires 36 5x11mm bearings and four 6x12mm bearings.

TRIPLE TRANNY

In the tradition of the Bruiser and the newer Mountaineer, the Hauler has a real shifting transmission. This one is different because it delivers three speeds of power to only the rear end. It was tricky to build, but after I had figured out how it worked, it was a cinch.

The 540 motor's pinion drives the top shaft that has three fixed gears on it. Running parallel to it is the bottom shaft, which has three gears all mounted with ball bearings. Each pair of upper and lower gear makes a different ratio, but only one can work at a time. Using your third channel, you move shift forks to select one of the three



Above: the underside of the King Hauler is just as realistic as its top side. Leaf springs and scale-looking shocks support the drive axles.



Above: cab lights and air horns add to the Hauler's realism.



Left: I wouldn't want to run into this bumper! The tail-lights can be made functional with Tamiya's optional lighting kit (not available at the time of this writing).

lower gears. When one gear engages, the other two roll freely on their bearings. The ratios are: first, 1:32.49; second, 1:17.66; and third, 1:10.66.

Do not use any grease on the gears! I did, and I soon found that they wouldn't shift properly. I had to disassemble the whole thing and clean the gears and forks.

RADIO GEAR

I considered using a 4-channel stick radio for the Hauler, but I decided to use my Futaba* 3PB instead. I have an older model that has the third-channel mini-dial under its cover, so I drilled a small hole to shift gears more easily. If you have a newer model, the third-channel knob is next to the power-level indicator. I use an S-148 servo for the gear shift and an S-9301 for steering. Nice adjustable servo horns are included for the gear shift so that you can get the throw just right. Then just turn the dial full left for first, to the middle for second and right for third.

For throttle, I had to use something with reverse. I went with the Tekin* 610-R because the reverse is proportional and it's heavy-duty. The setup instructions are great, and the included heat sinks, tie-wraps and servo tape are nice. I added two capacitors to the motor.

The receiver antenna wire is soldered to a metal tab, and it's connected to the steel whip antenna on the roof. I didn't cut the wire; I bunched it up with a tie-wrap.

DETAILING

Besides the awesome design of the chassis and driveline, the body was spectacular. Tamiya has always amazed me with their molding abilities and attention to details; this time, I was floored. The entire cab and sleeper section are molded of one piece of polystyrene. I had to mount the sunroof cover in the roof, but that was about it. Everything from rivets to hinges is reproduced with the utmost detail.

A Crash Dummies figure fits the driver's seat perfectly. A light set will be available soon. The headlights, fog lights, taillights, five roof lights and front and rear blinkers will all light with the light kit. The system is automatic and it also includes a backing beeper. Taillights are



A Crash Dummies figure makes the perfect driver for this monster rig!

KING HAULER

ManufacturerTamiya
TypeBig Rig
Scale1/14

CAB DIMENSIONS:

Overall Length23.25 inches
Width7.25 inches
Wheelbase (to rear wheels).....17.60 inches
Front Track6.25 inches
Rear Track5.45 inches

WEIGHT:

Gross (with batteries)7 pounds,
5.2 ounces

BODY:

TypeKenworth-style with sleeper
MaterialPolystyrene

CHASSIS:

TypeLadder
MaterialAluminum and plastic

DRIVE TRAIN:

PrimaryGear
TransmissionThree-speed (remote shift)
Ratios.....1:32.49, 1:17.66, 1:10.66
Differential(s)Bevel gear
Bearings/Bushings40 Oilite bushings

SUSPENSION:

F/R: TypeLeaf-spring, spring shocks
DampingNone

WHEELS:

Front: TypeChrome-plated plastic
Dimensions (DxW)1.8x.75 inches

TIRES:

F/RRealistic truck tread x10

ELECTRICS:

MotorStd. Mabuchi 540
Battery6-cell*
Speed ControllerTekin 610-R*

TRAILER DIMENSIONS:

Length34.25 inches
Width7.35 inches
Height11.75 inches
Weight11 pounds, 13.2 ounces
Wheelbase (cab front to trailer rear)
3 feet, 6.5 inches
Material . Aluminum sheet panels and edges

SUSPENSION:

Rear: TypeLeaf-spring shocks
DampingNone

WHEELS:

Front: TypeChrome-plated plastic
Dimensions (DxW)1.8 x.75 inches

TIRES:

RearRealistic truck tread x8

OPTIONS TESTED:

Futaba 3PB transmitter, R103F reciever,
S9301 and S148 servos, Tekin 610-R ESC,
Crash Dummy test driver

HITS

• Ultra-detailed model with amazing features. • Tranny is a work of art. • Trailer is built better than most that are on the highway.

MISSES

• Cost and complexity may put this kit out of the reach of beginners.

* not included

also available for the trailer. (Look for a follow-up article when I get my hands on a set.)

THE TRAILER

I was completely knocked for a loop when I saw the box for the trailer. I expected it to be made of plastic with Lexan side panels. But why did the box weigh 15 pounds? The trailer is made of high-quality aluminum. The chassis rails are made of

black-anodized angle stock and run the length of the trailer. The front, top, bottom, side and rear panels are all made of 0.057-inch sheet aluminum. The side panels are ribbed like those on full-size trailers, and they come with a protective plastic covering that you just peel off.

The only plastic on the box itself is the plastic interior floor and the corner joints. I assembled the box according to the instructions, but I didn't like how it rattled, so I used clear silicone glue at all the joints to make it rock solid.

The rear doors open with a twist of the lock. Four pins lock the doors to the frame, just as they do on a full-size trailer.

Below the box is a simple rolling-axle assembly that's supported by leaf-springs.

KING HAULER



These neat wheel chocks are included with the King Hauler trailer kit.

Bushings are included for the axles; they work well. Eight wheels are mounted to the axles in the same manner as the cab. Little aluminum spring-loaded shocks are used as well, but they aren't red like the ones on the cab.

The front of the trailer is held up by two spring-loaded legs that retract when the truck is hooked up. Be careful when assembling these legs, because the process is a little confusing.

A full set of decals comes with the trailer so that you can accent it easily without painting. I was glad to see that the red of the decals matched the Testors no. 1231 bright red that I used for the cab. Use a credit card to rub down the decals on the sides.

How big is this trailer? Well, it's 34 inches long, and I easily fit four six-packs of soda inside it, end to end. The weight of the soda bottomed the springs, but the truck ran well in low gear!

HEAD OUT ON THE HIGHWAY

The test drive was a blast! At first, I drove the King Hauler out on the street in second gear without the trailer. I rotated the third channel into first and second, but I didn't notice much difference. Then it dawned on me: I had forgotten to hook up the linkage to the servo! I hooked it up, and wow!—what a difference.

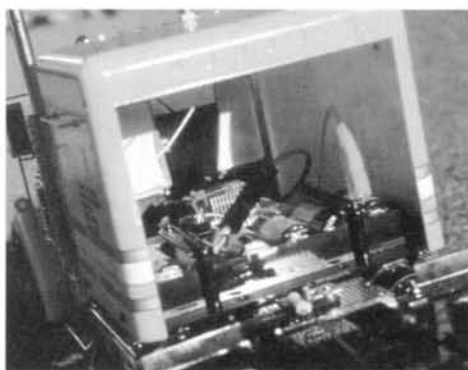
I don't recommend that you shift while the truck is moving. I did it once, and I wasn't impressed by the grinding and clunking of the gears. In first gear, the truck was very slow, but the motor screamed. It had good pick-up, but it topped out in 2 feet. Second gear was comfortable, and the truck wasn't too slow off the line. Third was fast! It took a good distance to get up to a speed of about 20mph. Twenty isn't too fast in most people's opinion, but it's fast for a top-heavy, 10-wheel vehicle.

Owing to the tranny's design, there's a good amount of play in the drive system.

When the truck is in second, you can roll it back and forth about 1 inch before you feel the motor resistance. This is because of the way the teeth on the gears engage. When the truck shifts from forward to reverse, there's an odd sound as the drive-train play is taken up and the truck bangs into gear. The system works well, but I don't recommend that you use a speed controller with full-on reverse,

because the power might munch the gears. The Tekin 610-R is great at delivering smooth power in both directions. I recommend that you trim the reverse speed down a lot; after all, the Hauler was designed to go fast in forward—not in reverse.

With the trailer attached, the truck looks amazing! With the automatic retracting legs, you can just back up to hitch up. The included wheel chocks make hook-up even easier. The entire rig is more than 4 feet long, and in third gear, it's still pretty fast. Don't try making any fast turns in third—



Rear of tractor with the access door open. The battery pack and the Tekin ESC can be clearly seen.

you could tip it over. Maneuvering the 18-wheeler in reverse is tricky. It will jack-knife—just like a full-size rig.

I've seen awesome detail on Tamiya kits before, but nothing like this! This is a museum-quality model with ultra detail, a working 3-speed tranny and a trailer that's built better than most aluminum briefcases. It isn't very easy to carry around (it weighs almost 20 pounds), but it is, without a doubt, another Tamiya masterpiece!

**Here are the addresses of the companies mentioned in this article:*

Tamiya America Inc., 2 Orion, Aliso Viejo, CA 92656; (714) 362-2240.

Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718; (714) 455-9888.

Tekin Electronics, 940 Calle Negocio, No. 140, San Clemente, CA 92673; (714) 366-9016. ■

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MUGEN CIVIC

PRESENTED BY KYOSHO & RADII

'93 World Challenge

by Frank Masci

The loudest spectacle in R/C racing—the Fourth Annual Kyosho World Challenge—landed smack-dab in the middle of “motor city”—Detroit, MI—this past summer, and 150 nitro-powered 1/8-scale buggies and 1/10-scale trucks were turned loose to churn up SEMRROC’s Freedom Hill Park off-road track.

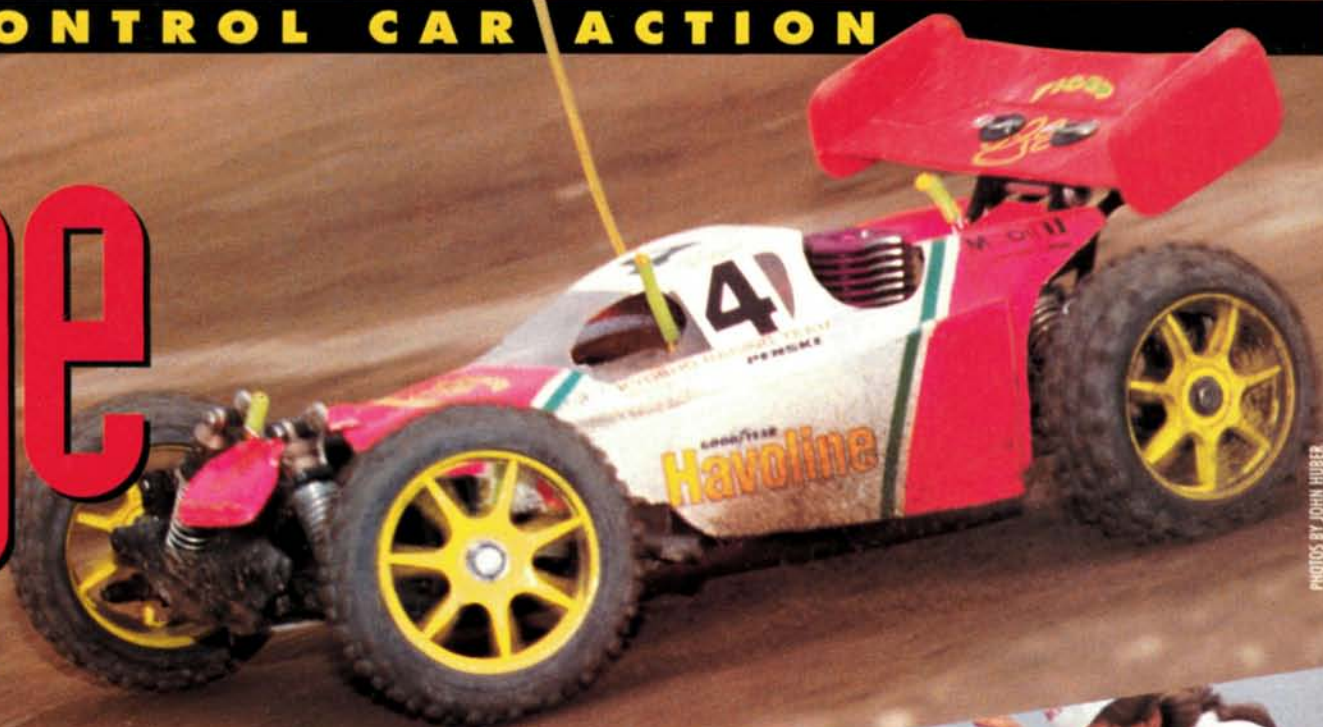
In keeping with the international theme of this event,

racers from Europe and Japan joined their American counterparts for three great days of dirty fun. It has been said that the foreigners have the advantage when it comes to gas racing because it’s more popular in their countries; but I haven’t noticed any difference between the fastest Americans and the fastest Japanese and European drivers. I guess we catch on quickly!



CONTROL CAR ACTION

ge



PHOTOS BY JOHN HUBER



**Panic in
Detroit!**

New Products in the Pits

KO-Propo's new on-board starter system is like having a "pit box in your pocket." This hand-held unit uses a standard 6-cell battery pack to power an electric starting motor and glow igniter that are on board the car or truck.



These new Kyosho 1/8-scale buggy tires are molded of a very soft rubber and have unique tread patterns.

Most of the Kyosho drivers used them on their Infernos with good results.



Eustace Moore ran this prototype truck; it featured some new MIP hop-up parts for the Traxxas Nitro Hawk. Shown here are a new, stronger rear shock tower and a trick-looking, purple-anodized pipe with a 360-degree manifold. Having the pipe exit at the rear of the truck instead of at the side improves weight distribution and, therefore, handling. MIP plans to release these parts some time in January or February.



Here's the final production version of Kyosho's Inferno 10 4WD racer. Powered by an O.S. CZ-R .12, this little screamer tore up the track during a demonstration run, posting lap times nearly as fast as those turned in by the 1/8-scale buggies.

Mike Hamilton of Traxxas showed up with this scratch-built prototype gas racing truck. There's no word yet about



whether Traxxas will produce the truck, but keep your fingers crossed, because it made the A-Main!

WORLD CHALLENGE

Attendance was fantastic. There were the usual heavy hitters from racing teams like Kyosho/DuraTrax, Mugen and Pirate, but the best part was the amazing number of privateers.

Two races preceded the World Challenge in the '93 Kyosho Gas Challenge schedule: the first was in Hemet, CA; the second, in Atlanta, GA. In Hemet, Chris McElroy and his Pirate M3 won the Buggy Class, and Brian Kinwald took Truck. Atlanta had some of the closest racing action I've seen, with Kinwald's Mugen and Kris Moore's Inferno locked in heated battle, and Moore victorious in the end. Also in Atlanta, Mike



Mike Hamilton, of Traxxas, found that McDonald's stickers make great wheel disks for 1/10-scale trucks.

Dunn's DuraTrax truck took the gold in a washed-out A-Main. With such a diverse field of cars, trucks and drivers, Detroit would be open territory for anyone who wanted to claim a prestigious win.

A FULL FIELD

Attendance was fantastic. There were the usual heavy hitters from racing teams such as Kyosho/DuraTrax, Mugen and Pirate, but the best part was the amazing number of privateers. I guess that of the approximately 150 drivers, only about 20 were factory sponsored.

In addition to the U.S. favorites, such as J.D. Beckwith, Kris Moore, Jack Johnson, Brian Kinwald and Jay Halsey, Team Kyosho brought Britain's Mike Craddock and Japan's Katsuyuki Kodama (one of Kyosho's chief car designers) and Kazushige Yoshida (a top engineer for O.S. engines).

Friday was designated for practice, which was done by "T-time," meaning

Mugen's New Athlete Buggy



Though it hadn't yet been released, I had a chance to look closely at Mugen's new 1/8-scale Athlete racecar. Mechanically, it's an entirely new car. The designers' primary design considerations were performance and making the car easier to work on. All the Athlete's major components, e.g., its diffs and radio gear, are easy to reach and to remove. Additionally, the Athlete is reputed to be much lighter than its predecessor—a change that should really show up on the track. Other features will include a completely sealed, molded receiver box and a hot-looking, purple-anodized aluminum chassis and radio tray.

Mugen designed the Athlete as a replacement for their Super Sport '93 racer, but they'll continue to sell the Sport Seven and Super Sport racing trucks. Right now, Mugen's racing team still uses the Super Sport '93, but they'll switch to the Athlete when it becomes widely available.

WORLD CHALLENGE

that you had to sign up for timed practice. This method worked very well; all the racers had their fair share of track time. There were to be three rounds of qualifying on Saturday and a fourth round and then the main events on Sunday.

QUALIFYING

Buggy qualifying was intense and very close. Though the track deteriorated during the qualifying, it wasn't reflected in the times; on Saturday, most of the fastest laps occurred in



Kris Moore draws a crowd as he works on his Inferno buggy.



Jack Johnson fuels up Kris Moore's Inferno during the 30-minute A-Main. Moore ended up in second place.

later rounds.

While all the reputedly fast drivers were jockeying for the coveted A-Main positions, however, a funny thing happened: a relatively unknown Canadian racer, Brian LaVigne, blasted everyone by putting his Paris-powered Inferno on the pole. Jammin' Jay Halsey couldn't match LaVigne's time and was relegated to second. Mugen driver J.D. Beckwith, Kyosho's Kris Moore and Team Mugen's Brian Kinwald rounded out the top five positions.

Truck qualifying was just as exciting. B.J. Christensen was top dog with his Traxxas Nitro Hawk-based "test mule," which featured many MIP mods. As in the Buggy Class,

1/8 BUGGY

Fin	Qual	Name	Chassis	Engine	Pipe	Fuel	Radio
1	3	J.D. Beckwith	Mugen	Rex	Mugen	Mu-Juice	Airtronics
2	4	Kris Moore	Kyosho	Paris Picco	Paris AL650	O'Donnell	KO-Propo
3	6	Derek Furutani	Mugen	Rex	Mugen	Mu-Juice	Airtronics
4	2	Jay Halsey	Pirate RS	Paris Picco	Paris AL650	Blue Thunder	Airtronics
5	9	Jeffrey Kinoo	Mugen	Rex	Mugen	Mu-Juice	KO-Propo
6	5	Brian Kinwald	Mugen	Rex	Mugen	Mu-Juice	Airtronics
7	8	Greg Garrison	Kyosho	Paris Picco	Paris	O'Donnell	JR R-756
8	10	Chris Walrod	Kyosho	O.S. RX-B	Paris AL650	O'Donnell	Airtronics
9	1	Brian LaVigne	Kyosho	Paris Picco	Paris	Blue Thunder	KO-Propo
10	7	Dave Henry	Kyosho	Paris Rex	Paris AL650	Blue Thunder	Futaba

1/10 TRUCK

Fin	Qual	Name	Chassis	Engine	Pipe	Fuel	Radio
1	4	Steve Charles	DuraTrax	O.S.	O.S.	O'Donnell	Airtronics
2	8	Bill Jeric	DuraTrax	O'Donnell	O'Donnell	O'Donnell	KO-Propo
3	10	Holli Bechard	DuraTrax	Paris O.S.	Paris	O'Donnell	JR R-756
4	7	Ruffy Rios	DuraTrax	O'Donnell	O'Donnell	O'Donnell	Airtronics
5	9	Mike Hamilton	Traxxas	Image	Mac	Blue Thunder	KO-Propo
6	6	Eustace Moore Jr.	MIP	O.S.	MIP	O'Donnell	Airtronics
7	5	Ron Dyer	RMS LX-T	Prata	Paris/RMS	O'Donnell	Airtronics
8	2	Jay Halsey	RMS LX-T	Leo	OFNA	Blue Thunder	Airtronics
9	1	B.J. Christensen	MIP	O.S.	MIP	O'Donnell	Airtronics
10	3	Bobby Horan	DuraTrax	O'Donnell	O'Donnell	O'Donnell	Airtronics

New York Story

Jay Halsey landed in second spot on the starting grid with his Losi/RMS Engineering LX-T truck. (This is the type of truck featured in our coverage of the Southeast Gas Challenge in the October '93 issue.) Driving a DuraTrax RC10T with a new O'Donnell .12 engine, Bobby Horan (who's well-known for his



Many drivers used two-way radio systems to communicate with their pit-persons.

If you think that you have to be a big-time sponsored driver to do well at a race like the World Challenge, think again. Note Jeffrey Kinoo's story. This 17-year-old from Brooklyn, NY, has only been racing R/C cars for just over a year, and he took a gruelling, 12-hour van ride to get to Detroit for his first-ever gas car race. How'd he do? Not only did Kinoo make the A-Main, but he also finished an impressive fifth overall—one spot ahead of Brian Kinwald!

I'll let him tell the story:

"I really wanted to try gas racing, but I was in summer school at the time, so I had to beg my teachers to let me go. Before the race, I thought that the best I'd do would be to make the D-Main or something, but after I got to Detroit and started running my car, I felt that I might do even better."

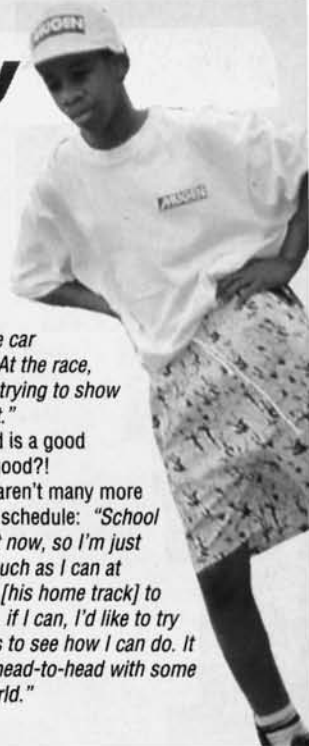
When asked if driving an 1/8-scale buggy was very different from driving 1/10 scale, Kinoo replied:

"It's weird, the gas cars have way more

power than the electrics; driving them was way different. In electric, you just let off the throttle, and the car will turn. In gas, you have to tap the brakes, or the car will just keep going. At the race, Brian [Kinwald] was trying to show me how to do it right."

Evidently, Kinwald is a good teacher. Maybe too good?!

Right now, there aren't many more big races on Kinoo's schedule: "School definitely comes first now, so I'm just racing electrics as much as I can at Queens Off-Roaders [his home track] to keep in practice. But, if I can, I'd like to try some more big races to see how I can do. It felt so good to race head-to-head with some of the best in the world."



Truck A-Main winner Steve Charles with his DuraTrax LX-T and pit crew.

on-road prowess) was third qualifier, and he was followed by Steve Charles and Ron Dyer, in fourth and fifth, respectively.

MAIN EVENTS

The Sunday-morning weather looked promising, but as the day progressed and the Main events were posted, the sky began to look ominous. Everyone hoped that the rain would hold off until all the

Mains had been run, but you know how uncooperative those wacky forces of nature can be.

During the Buggy B-Main, the clouds opened, drenched the track—and the cars—and formed puddles which, in some areas, were soon several inches deep. Most of the drivers tried to make a go of it, but the depth of the water soon proved to be too much; but for a while, I thought I was watching an R/C boat race!

As the rain subsided, word came from race director John Thawley that the

Tires	Sponsors
Pro-Line.....	Mugen, Com Tru, Airtronics, Jammin' Products, Pro-Line, RCPS, Lunsford, Associated, Reedy
Kyosho.....	Kyosho, Paris Racing, KO-Propo, Moore's Welding
Pro-Line.....	Mugen, LRP, Associated, Yokomo, Pro-Line, SoCal Raceway, MIP, Kimbrough, Lunsford, RCPS
OFNA.....	OFNA, Horizon, Blue Thunder Fuel, Paris Racing, Airtronics, Lunsford, Losi, Ranch Pit Shop
Pro-Line.....	Mugen, Powerline Cells, Queens Off-Roaders, Team CRC, MnM Painting, Team Savage, Hackett Racing, Quantum R/C
Pro-Line.....	Mugen, Pro-Line, Airtronics, MIP, Associated, Reedy, Novak, Competition Electronics, Yokomo, RCPS, PRP
OFNA.....	A-Main Racing, wife and son
Kyosho.....	Kyosho, O.S., DuraTrax, Hobbico, Peak Performance, Tekin, Airtronics, RPM, HPI, Deans, RCO, Waldo Racing
Kyosho.....	Kyosho Canada, Pinnacle Hobby
Kyosho.....	Kyosho Canada, ESP Batteries, Pinnacle Hobby, special thanks to Bill Jeric

Tires	Sponsors
Losi.....	Me
Losi.....	Hobbico, DuraTrax, O'Donnell, KO-Propo, Novak, Team Losi
Losi.....	Team Losi, DuraTrax, Kyosho, JR-Remote Control, Paris Racing, Lunsford, Thorp Mfg.
Pro-Line.....	Composite Craft, DuraTrax, O'Donnell, Associated, MIP, RCPS
Losi/Pro-Line.....	Traxxas, Mac Products, MIP, Blue Thunder, Black Bart Racing
Pro-Line.....	MIP, Novak, Kimbrough
Losi.....	Team Losi, RMS, OFNA
Losi.....	OFNA, Lunsford, RMS, Losi, Blue Thunder, Airtronics
Pro-Line.....	MIP, Novak, Kimbrough
Pro-Line/Losi.....	Composite Craft, DuraTrax, Airtronics, Hobbico, O'Donnell, HPI



New DuraTrax chassis braces for the Kyosho Inferno.

A-Mains would be run when the track had dried out a bit. This news was—to say the least!—well-received by the drivers.

The 15-minute Truck Main was run first, followed by the gruelling, 30-minute Buggy Main.

The muddy track provided excellent traction, and the trucks took full advantage of it. As it shot out to an early lead, Bobby Horan's O'Donnell-powered DuraTrax

WORLD CHALLENGE



The 1/8-scale stadium trucks put on an impressive demonstration run during a lull in the racing action. Trucks are available from Kyosho, Mugen, and Pirate.

truck looked unstoppable, but at the 5-minute point, it was sidelined by technical trouble.

B.J. Christensen was quick to capitalize on Horan's misfortune, but the mud soon took its toll on his drive train and put him out permanently. Eustace Moore then inherited the lead. His MIP/Traxxas Nitro

At the start of the Buggy Main, J.D. Beckwith took the holeshot and never looked back. Over the next half an hour, Kris Moore was able to keep Beckwith's Mugen in his sights, but he couldn't make up any ground. As the race progressed, it turned into a two-car battle between Beckwith and Moore; no one else was within striking

distance.

Back in the pack, Mugen driver Derek Furutani passed Halsey and Jeffrey Kinoo (another Mugen driver) to take third. Meanwhile, Brian Kinwald was trying to make up for his early trouble by battling his way up to sixth place, but he was too far down from the leaders to be a threat.

The Numbers Game

Which cars and trucks were most popular at the Kyosho World Challenge? Here's the breakdown:

1/8-Scale Buggies	No.
Kyosho Inferno	40
OFNA Pirate	20
Mugen Super Sport	17
OFNA HODR	3

1/10-Scale Trucks	No.
A-Main/Dudgeon Racing	22
DuraTrax conversion	17
Traxxas Nitro Hawk	13
Kyosho Outlaw Rampage Pro	2
MIP prototype	2

KYOSHO'S OUTLAW RAMPAGE PRO

Several of the Team Kyosho drivers, most notably Katsuyuki Kodama and Kris Moore, arrived at the World Challenge race with prototype versions of Kyosho's new Outlaw Rampage Pro 1/10-scale gas racing truck. Based loosely on Kyosho's new electric racing truck and buggy, the truck has an aluminum chassis tub for better heat dissipation

and a fully enclosed gear tranny that can be adapted to work with Losi's Hydra Drive slipper-clutch system. No word on availability yet, but the version I saw looked very near to being production-ready, so stay tuned for the latest on this hot-looking racer.



Hawk looked as flawless as his driving, but the technical gremlins had their way in the end, and Eustace's truck crept to a halt a scant two laps from the end of the race.

As these events unfolded, back in the pack, a close fight was going on between Steve Charles, Holli Bechard and Bill Jeric. Charles and Jeric carried the battle to the finish line, where Charles edged Jeric by a mere 2 seconds. Bechard crossed next, just 8 seconds back. Remember that this was a long Main, so these times show very close racing.



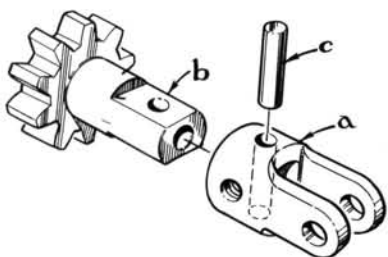
Left: Steve O'Donnell holds his new .12 engine. Above: close-up of the new O'Donnell .12 engine.

After 30 minutes, Beckwith crossed the line with the only 71-lap run, and he was followed by Moore, who ran a quick 70 laps. Furutani held on to third place, but he was nearly four laps down from the leaders.

Despite the rainy finish, everyone had a spectacular time, either racing or just watching the action. The excitement of the Truck Main was surpassed only by Beckwith and Moore's nearly flawless driving in the Buggy Main, in which, for more than 70 laps, each put his car mere inches from the corner boards! Congrats to the winners and to Bill Jeric and John Thawley for another successful event. Well done!

PIT TIPS

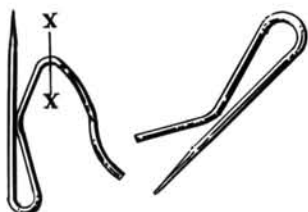
by JIM NEWMAN



TRAXXAS YOKE SPINNING

Even though they're held by two setscrews, the Traxxas drive-shaft yokes have been known to spin. To prevent this, drill a $\frac{5}{64}$ -inch hole through the yoke (a) and the stub axle (b), then drive a 0.078-inch music-wire pin (c) through both. A drop of thick CA or epoxy on the ends of the pin will keep it there.

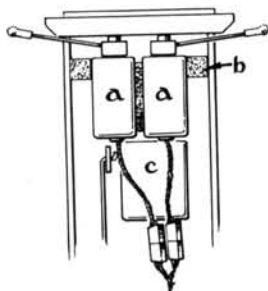
Kevin Pate, Seymour, CT



DRAPERY BODY CLIPS

Cut drapery hooks where shown (X-X), file the cut ends smooth, and you've quickly made some emergency body clips.

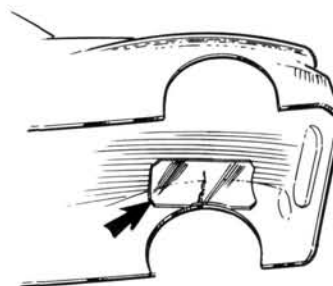
John Balkema, Stayton, OR



USA 1 HIGH-POWER STEERING

Do you want more steering on your USA 1? Try this: lock the rear-wheel steering, then jam in two Futaba S128 servos (a), upright, holding them on each side with wooden blocks (b)—no screws or tape. (The radio-box cover also helps to hold them in place.) To prevent the servos from rattling, put a piece of sponge-rubber tape between them. Next, install a servo-saver on each servo shaft, a Y-harness to connect the servos to the receiver, and, finally, the throttle servo (c). With this setup, you'll have twice as much torque for less than half the cost of a single, high-power servo.

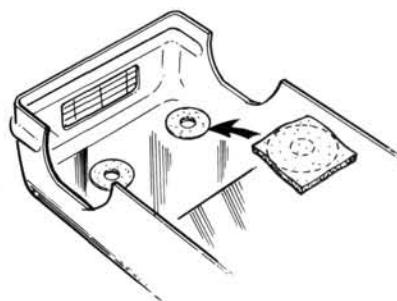
Donald Jones, New Egypt, NJ



EZ BODY REPAIR

If the body on your R/C vehicle cracks, you can easily repair it. Epoxy a Lexan patch to the inside. Don't use CA glue, because it makes Lexan brittle.

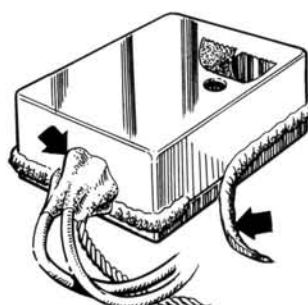
Ethan Woodruff, Fountain City, IN



BODY-SHELL CUSHIONS

To prevent your R/C body from rattling on its mounting posts, install homemade washers. Cut out four disks of servo tape, punch a hole in the center of each one to make washers, then stick these washers over the mounting holes.

Forbes Husted, Mahwah, NJ



SILLY PUTTY SEAL

If you want to run your vehicle in the snow or rain, you must first seal all the case joints and wire entry points; toy-store Silly Putty will do the job. Seal the adjustment holes with electricians' tape, but don't get too wild! Your equipment will be water-resistant but *not* watertight.

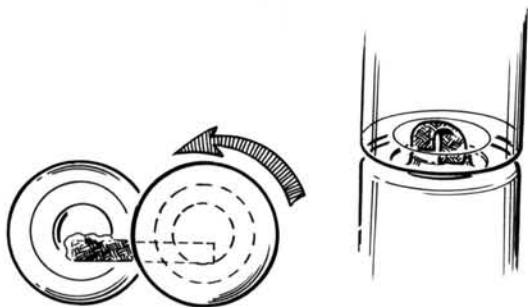
Kevin Lubsen, Cavan, Ontario, Canada



BODY-CLIP STORAGE

Try this safe, convenient way to carry spare body clips. Screw a body post to the side of your pit box, then hang the spare clips as shown, where they're instantly at hand.

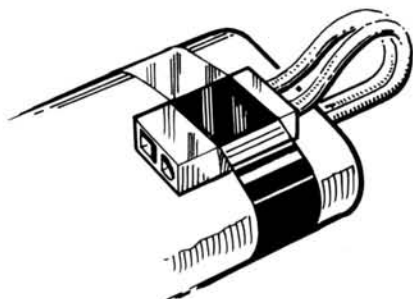
Kris June, Lapeer, MI



NEATER NI-CD CONNECTION

To make your own stick packs, position the cells as shown, then solder the braid into position (off center, as shown, remembering to install the battery-insulating washer around the positive terminal to prevent a short). Now rotate the second cell to align it with the first one for a short, neat, stick pack in which the soldered connections lie side by side instead of on top of each other.

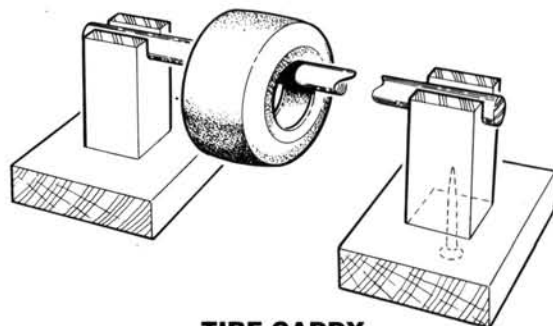
Mervyn Rudgely, Saline, MI



NI-CD PLUG SECURITY

For neatness, and to prevent the battery leads from flopping around inside the car and fracturing the body or becoming disconnected, tape the plug tightly to the Ni-Cd pack, as shown.

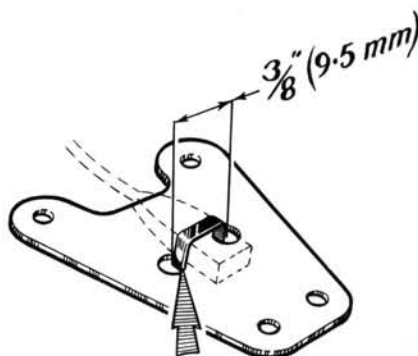
Adam Teccia, Laguna Hills, CA



TIRE CADDY

Make a tire caddy out of lumber scraps that you glue and screw together. The bases measure 1x4 inches; the uprights are 1x1-inch blocks; and the dowel can be as long as you like, but it should be at least 1/4 inch in diameter. For a professional look, finish the caddy with enamel paint. When you travel to a race, disassemble it and pack it in your pit box.

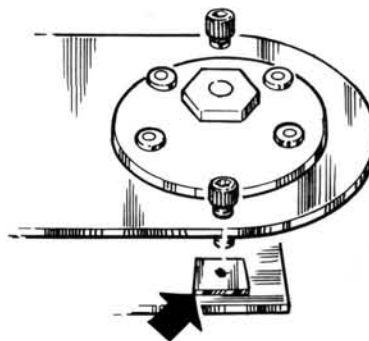
Warren Yeager, Hilton, NY



ESC SWITCH MOUNT

Drill 1/8-inch holes through the transmission brace, spaced as shown. Thread a nylon tie-wrap through the holes and over the switch, then pull it tight and clip off the excess. It's stronger and more reliable than servo tape.

Allan Shier, Glendale, CA



TWEAK SCREW GOUGING

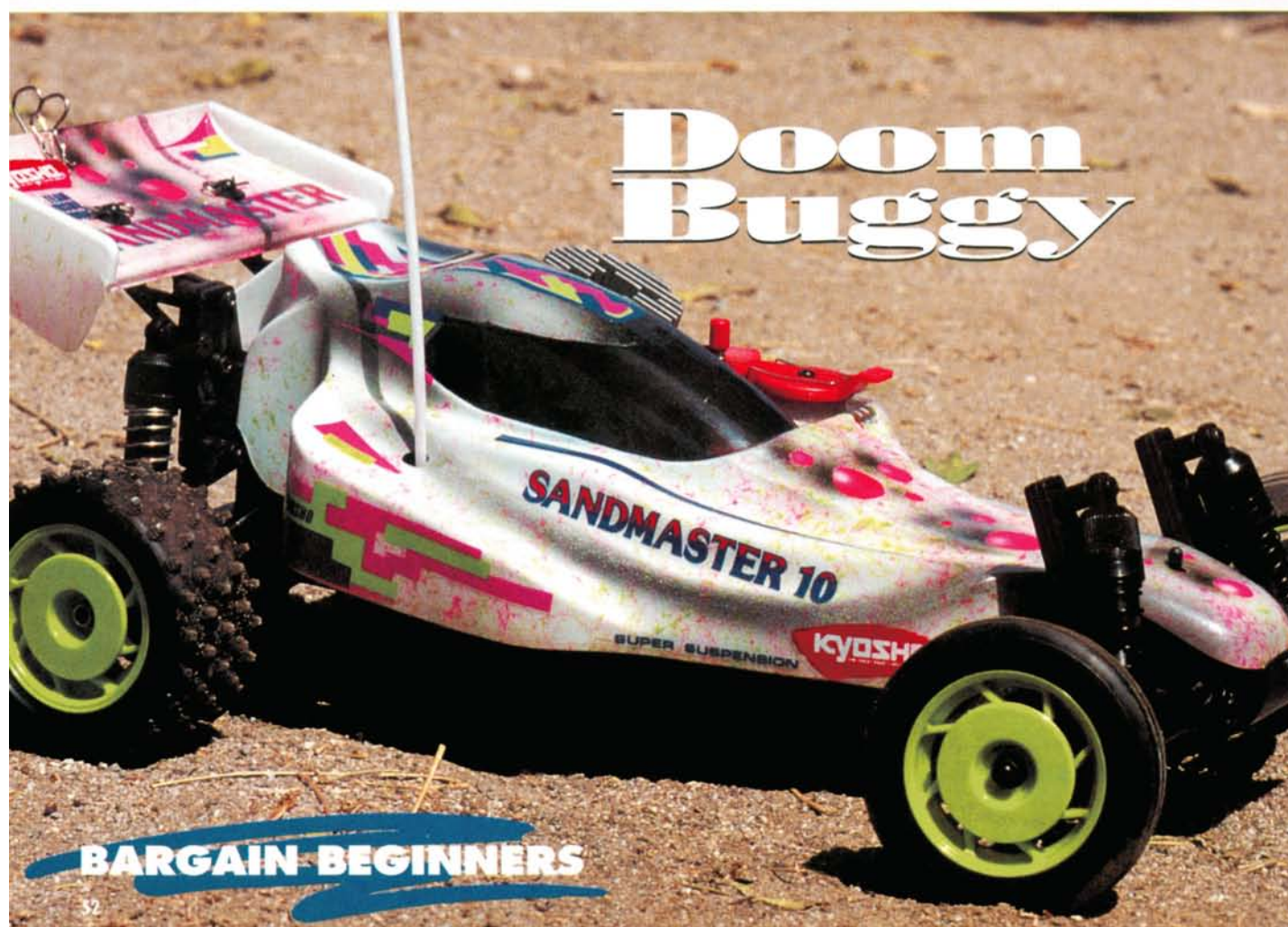
Protect your chassis from being damaged by tweak screws. Cut 5/16-inch squares out of adhesive aluminum house numbers, then stick these pads under the tweak screws.

Jerry Dotson, Puyallup, WA

BOLINK'S* DIGGER IS the perfect car for beginners. It's easy to build, lots of fun to drive, and, with a price of less than \$70, it's within the reach of those who have limited funds. When the Digger arrived at the *Car Action* office, Frank and Doogie didn't have to look too far to find a beginner to build it! I was hesitant at first, but I decided that it was time to put down my dictionary and do some diggin'!

Bolink designed this car "to bring the fun back to R/C." It has an innovative, extremely simple chassis that's light and rigid, yet very strong. It's made to run—or to do flips, rollovers and wheelies!—in parking lots, driveways, streets and smooth unpaved areas. You can get the Digger in kit form, as I did, or, if you're really impatient, you can buy it assembled and ready for radio gear. Although I found the kit's instructions slightly vague (I'm an *absolute* beginner, and not too handy with tools!), I asked for a little help, and after about four hours of building, it was zipping around my apartment.

Photos by John Huber



BARGAIN BEGINNERS



**Dig
This!**

KYOSHO

BY MIKE OGLE

I'VE BEEN WATCHING the growing popularity of gas-powered R/C cars over the past year or so, but although gas racing looked interesting and fun, I didn't want to sink several hundred dollars into a totally new type of racing, much less set myself way back on the learning curve. After all, that money could go for some hi-zoot electric stuff, like a dyno, or it could buy a few topnotch modified motors that would enhance my existing racing program considerably.

But, here I am, on a beautiful Saturday in Southern California, running Kyosho's* new gas-powered buggy—the Sandmaster—blipping the throttle out of turn two and watching it run past me sounding like a nest of angry hornets. I'm only on my third tank of fuel, but I've been out here long enough to get a good sunburn started, and I'm having too much fun to quit just yet. Maybe after another couple of tanks....

BOLINK DIGGER



TypePavement basher
Scale1/10
List price\$69.95

DIMENSIONS:

Overall length12 in.
Width8.4 in.
Wheelbase8 in.
Front track6.9 in.
Rear track6.75 in.

WEIGHT:

Gross
(w/batteries)2 lb., 4 oz.

BODY:

TypeVW Beetle

MaterialLexan

CHASSIS:

TypeTwo-plate vertical
MaterialFiberglass

DRIVE TRAIN:

PrimaryPinion and spur
Transmissionnone
Differential(s)none
Bearings/bushingsOilite
bushings

SUSPENSION:

Front/Rear: Typenone
Dampingnone

WHEELS:

Front: TypeOne-piece
plastic

Dimensions

(DxW)1.75x1.2 in.

Rear: TypeOne-piece
plastic

Dimensions

(DxW)1.75x1.75 in.

TIRES:

Front/rearFoam

ELECTRICS:

Motor, battery, speed
controllerNot included

HITS:

• Inexpensive. • Easy to assemble. • A blast to drive.

MISSSES:

• Not for off-road—no suspension. • No diff, so it can't make tight turns.

DIGGER

ASSEMBLY

The chassis is made of two flat fiberglass plates that you connect with plastic spacers. Be careful when you tighten the bolts into the plastic spacers; I split one of the spacers. The kit includes two little rollers that fit on the rear spacer and allow the Digger to do awesome wheelies!

Another piece of fiberglass fits into slots in the chassis plates to form the front end. It helps if you file the slots slightly before you slide the front-axle plate in. Pressing the bushings into the chassis was slightly difficult; I couldn't push them in by hand, so I used a hammer and gently tapped them in.

The front end was relatively simple. I bolted the kingpins to the front-axle plate. (I had to hold each kingpin with a pair of pliers so that I could tighten the nut on the other end.) The steering blocks fit over the kingpins and are held in place by small E-clips.

The rear end was easy to assemble, but I had to take some plastic off the rear hubs with a drill bit. Again, take care not to over-tighten the setscrews that hold the hubs (the threads will strip). Also, make sure that the rear bushings are aligned so that the axle

KYOSHO SANDMASTER



Scale1/10
Price\$269

DIMENSIONS:

Overall length16.5 in.
Width9.7 in.
Wheelbase10.9 in.
Front track8 in.
Rear track8 in.

WEIGHT:

Gross
(w/engine)3 lbs., 5 oz.

CHASSIS:

TypePlastic
MaterialPlastic

DRIVE TRAIN:

TypeCentrifugal clutch
PrimaryPinion/spur
TransmissionGear
Differential(s)Gear
Bearings/
bushingsNylon bushings

SUSPENSION:

Front: TypeCoil-over
plastic shocks
DampingOil-filled
Rear: TypeCoil-over
plastic shocks
DampingOil-filled

WHEELS:

Front: TypeInjection-
molded, one-piece

Dimensions

(DxW)2x0.75 in.

Rear: TypeInjection
-molded, two-piece

Dimensions

(DxW)2x1.5 in.

TIRES:

FrontThree-rib
RearBlock-spike rears

POWERPLANT:

EngineGS 11
PipeStandard
CarbStandard

HITS

• Low price (for a gas car) • Comes mostly assembled. • Can use many existing Ultima/Raider hop-up parts • An easy, introductory, "fun" gas buggy.

MISSSES

• Plastic shocks. • Flexible shock towers. • Non-adjustable camber links and nylon bushings.

SANDMASTER

MORE THAN ITS PARTS

So what is it about the Sandmaster that brought about my change of heart? Well, there are several things. The Sandmaster is based on some familiar electric-buggy components. It's a hybrid consisting of one part Kyosho Rampage (gas power, wheels and tires), one part Kyosho Ultima (A-arms and suspension components, transmission, half-shafts, etc.) and perhaps a generous twist of entry-level Raider thrown in.

The Sandmaster also came to my doorstep about 90 percent assembled. That's right, virtually no assembly time! It was pretty much ready to go. I installed the wheels, tires, shocks and body components and added the fuel, a glow-plug driver and a receiver battery pack. And, if you want the punch line to the story, check out the suggested list price for one of these little nitro buggies! At \$269.99 (with an engine), almost anyone could try out gas power without bankrupting his racing budget.

Even though the Sandmaster comes almost completely assembled, every screw and bolt must be tightened. What really needed attention were the front end and the steering system, both of which had binding problems. The front A-arms didn't move freely up and down, so I took them

Jr Propo's Alpina Radio



When I was looking for a high-quality, entry-level radio to use with the Digger, Horizon was kind enough to send a JR Propo Beat 2 Alpina. It's a pistol-grip, wheel-type AM radio that features large, easily accessible steering

and throttle-trim knobs; servo-reversing; variable-rate steering; and throttle and steering endpoint adjustments that allow fine-tuning at the track.

All JR receivers have ABC&W (Anti-blocking, Cross-Modulations and Window), which is a patented circuit that uses an electronic window to refine the incoming signal from the transmitter. Any distorted or off-frequency signal is rejected, and the new signal is cleaned up, amplified and sent through the window again, so you get the purest signal possible—no glitching!

All this technology aside, I find the radio very easy to hold and use. The one I received came with the 2-channel, ABC&W, BEC receiver and two NES-507 servos. It retails for \$119.95—quite a bargain for the features it includes!

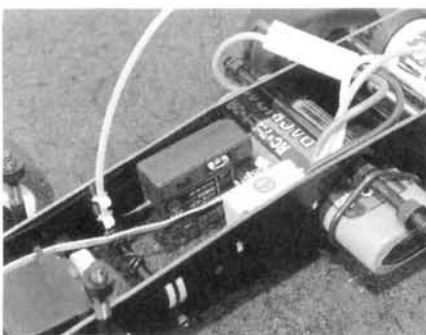
DIGGER

will rotate smoothly.

Next, I bolted on the wheels, and it was time for the electrics.

RADIO GEAR

The folks at Horizon supplied me with a JR* Alpina AM radio set. This pistol-grip radio comes with two NES-507 servos and a 2-channel AM receiver. It's very comfortable to hold and easy to use. I installed an SCI* Viper Junior 600 ESC, and I was pleasantly



The Digger's chassis is made up of two fiberglass plates that are held together by nylon spacers—a simple, yet rigid, design.

surprised by how easy it was to program. Once I had it hooked up, I just pushed the setup button a few times while I held the radio's trigger, and that was it. Another plus of the Viper ESC is that it

comes with a universal connector system that allows you to hook it up to any radio system.

I also used a PTI* 7.2V battery pack and a Trinity* Monster Horsepower Jr. stock motor. I needed a little help to hook all this up, but it really wasn't too tough. If you're a true beginner, you might want to have a knowledgeable friend nearby to answer your questions. (How do you install a motor, anyway?) If you've done this before, however, you'll find it a cinch!

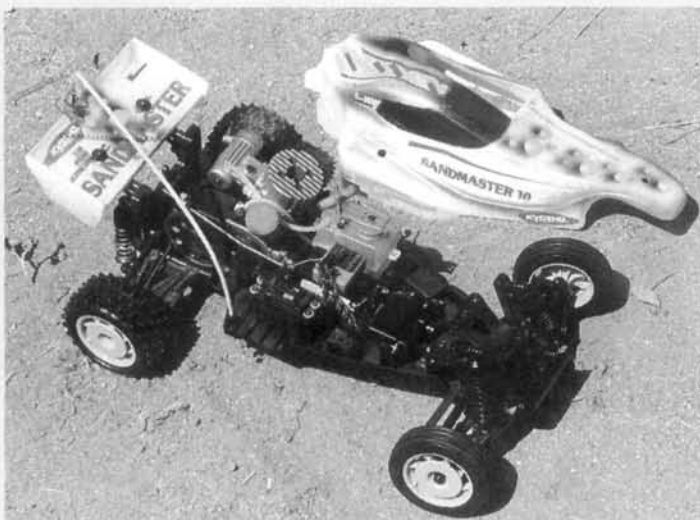


SCI's Viper Junior ESC worked well and was very easy to program.

HERBIE RIDES AGAIN!

The Digger comes with a painted body (I

SANDMASTER



The 'Master is based on Kyosho's new Outrage electric buggy, so it's tough and easy to work on. Its GS 11 engine comes installed.

off and reamed out their suspension-pin holes a little (to ensure that the suspension would work smoothly).

The oil-filled, coil-over shocks were filled with a light shock oil (20WT, I think) and have plastic bodies. They're OK for a backyard Grand Prix, but if you can, you should replace them with better shocks, such

as Kyosho's Gold or Equalizer shocks.

My Sandmaster also seemed to have excessive front toe-out. So, for greater "tune-ability," replace the one-piece, non-adjustable camber and steering links with adjustable turn-buckles (for a small cost).

You should, just for insurance, remove the carb and muffler, then re-install them

using a generous coat of good-quality gasket sealant, because the small, .10-size gas engine will never run crisply or idle well if it has any air leaks. The same goes for the pressure line that runs from the gas tank to the muffler.

The plastic, Raider-style chassis is reinforced with a large metal plate that functions

as a heat sink for the engine. It's all topped off with a Lexan body and wing that cover everything but the cylinder head, the flip-top gas tank and the pull-starter.

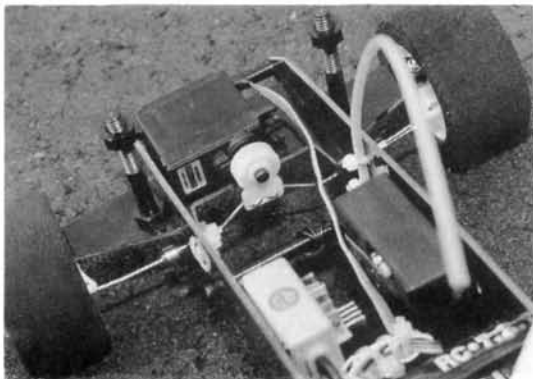
Because these components are exposed, you don't have to wrestle the body on and off between runs. This is especially nice in a gas car, where you have to watch what you touch, because the cylinder head and the exhaust get *hot* after a few minutes!

ON TRACK IN NO TIME

Needless to say, I was on the test track (an empty dirt lot) in no time. I started the Sandmaster on 15 percent nitro for a couple of tanks. I let it idle, adjusted the carburetor and burped the throttle intermittently to allow the engine to break in. Don't rev it up to full throttle on the bench immediately, because gas engines don't seem to like that kind of treatment.

The fuel tank has a convenient built-in primer pump, but you should watch the fuel line carefully. On more than one occasion, the fuel line popped off and filled the chassis with fuel. If you happen to flood the engine (you'll know that this has happened when it won't start and the recoil starter is very hard to pull), don't force it. Just remove the glow

breathed a sigh of relief when I saw this!); all you have to do is trim off the excess material with a pair of Lexan scissors and make four holes for the body posts. I like the "Beetle" body that comes in the kit, but if it's not your style, there are alternatives. Bolink offers a number of other bodies, from a Chevy Luv pickup to a Ferrari F-40. You can upgrade the Digger with such accessories as a diff, ball bearings and aluminum hubs, but for now, I like it just the way it is!



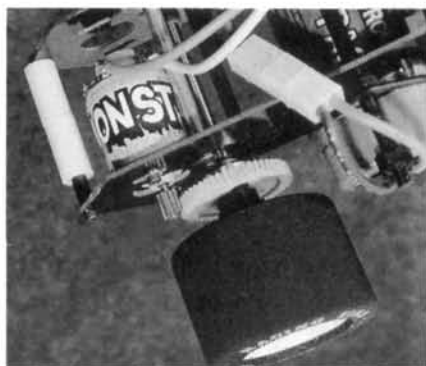
A JR Remote Control NES-507 servo points the Digger in the right direction.

DOIN' DONUTS

I didn't even wait to go outside for the Digger's first test drive; I zoomed it around my apartment. I had to adjust the steering to allow it to make tighter turns, and then it was off and running. When I turned full right and floored it, the car spun in circles and got up on one wheel! It was nuts! We were laughing so hard that I had to put the radio down and stop the car for a minute.

The next day, we ran the Digger on the street, and it really flew! To do wheelies, we just lifted up the front end and gave it some gas. (If you have enough traction and power, it will lift up on its own.) I tried it on the grass, but the ground was too bumpy. It got up some speed, but it flipped when I tried to turn it. The body's rounded top allowed it to flip right back over, though. There's nothing boring about this car!

If you're new to R/C and you want a car that's inexpensive and easy to build, or if you're an experienced racer who wants to go out and have a blast, you can't beat the Digger!



The kit comes with these mounted foam tires on nylon wheels. As an upgrade, Bolink offers a ball-differential kit to bolster performance.

**Here are the addresses of the companies mentioned in this article:*

Bolink R/C Cars Inc., 420 Hosea Rd., Lawrenceville, GA 30245; (404) 963-0252.

JR Remote Control, distributed by Horizon Hobby Distributors, P.O. Box 3726, Champaign, IL 61826; (215) 355-0022.

SCI Corp. of America, P.O. Box 13099, Sarasota, FL 34278.

PTI, P.O. Box 4648, Winston-Salem, NC 27115; (919) 761-1375.

Trinity Products Inc., 1901 E. Linden Ave., #8, Linden, NJ 07036; (908) 862-1705. ■

plug and give the starter a few pulls to clear out the extra fuel through the glow hole. Then, it should start right up!

WHAT A GAS!

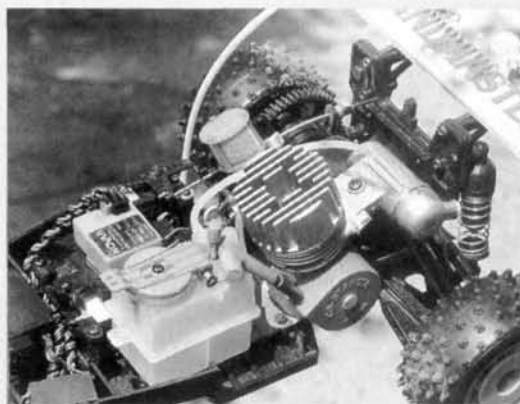
On the track, the Sandmaster handled a lot like a comparable electric buggy, but without an electric's low-end torque. Because of this, I could punch it out of the turns without much wheelspin. The Sandmaster's mid-

range and top-end speeds, however, were much more impressive; they easily matched those of a mild-modified-motor electric buggy, and the noise and the smell made it seem as though my car was going much faster than it actually was!

I really can't say enough about how much the noise adds to the driving experience. When the car gets

loose, the engine's pitch goes up; when the car decelerates, you hear the engine rumble down to a lower note. It's an entirely new dimension!

Just as there are beginner electric cars for racers to get into R/C on the cheap, Kyosho offers the Sandmaster as a beginners' gas buggy. Even though it was designed as an entry-level gas car, the Sandmaster is enough to give you a rush if you've never driven a gas car before.

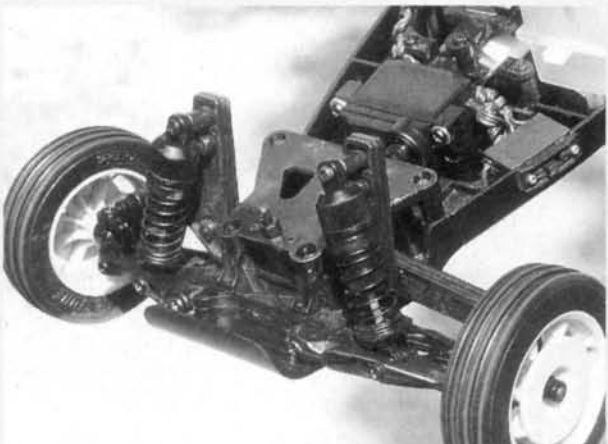


The Kyosho GS 11 engine started easily and ran well for the test session. The pull-starter and flip-top fuel tank are nice touches.

If you're flirting with the idea of going gas, but you're holding back because of the cost or because you're afraid to assemble something unfamiliar, check out a Kyosho Sandmaster. It's more decibels for the dollar than anything around!

**Here's the address of the company featured in this article:*

Kyosho/Great Planes Model Distributors, P.O. Box 9021, Champaign, IL 61826; (217) 398-6300. ■



Kyosho's Kelron shocks and rugged, molded A-arms and shock tower make up the Sandmaster's responsive front suspension.

NITRO NEWS

RADIO NEWS

by JEFF BRONSTEIN

Some racers change cars as often as they change their clothes, yet it seems that they always have the same radio equipment. It's almost as if the first radio brand they choose is the brand they'll use for life. For newcomers, choosing a radio is more difficult than choosing a car or a truck. They have little information on which to base their decision, and generally, there aren't any clear-cut favorites among veteran racers. Unfortunately, price becomes the sole deciding factor. Price alone, however, can be deceiving. Several factors should be considered before you make the important decision of which radio to buy.

One common misconception is that all of the radio gear must be from the same manufacturer. It may be simpler, but it isn't necessary. It's OK if you own a Futaba radio and prefer Airtronics or KO servos. As long as the wiring is done correctly, mixing and matching radio equipment is acceptable. Don't try mixing transmitters and receivers though; they don't always use the same tuning. Even some after-market micro receivers have been tuned for a particular transmitter. No matter which brands you choose, be sure that everything works together before you install the system.

TRANSMITTERS

Consider your commitment to the hobby/sport.

Be honest with yourself; if you want only an inexpensive, front-yard plaything, save yourself some time and money and check out the local toy store selection.

Competitive R/C cars—especially gas-powered versions—demand a relatively substantial amount of time and effort.

If, on the other hand, you really want to try your hand at scale racing, invest in good equipment. Save if you must, but don't buy hastily. Inexpensive radio systems generally have very few adjustments, so it's difficult to adapt them to some cars and equipment.

At the other end of the spectrum, the most expensive, computer-driven radio systems have more bells and whistles than some average racers could ever hope to understand. Either way, you might wind up with more or less than you really need.

Gas-powered cars and trucks are very challenging, especially when the model is difficult to control. Look for a radio with basic features that will allow you to fine-tune the model's performance.

Even the most basic radios should include steering and throttle trims and servo reversing. A few



It's OK to mix and match radio equipment from different manufacturers as long as the receiver leads are properly matched to the receiver.



More expensive radio transmitters have features that make setting up and tuning your car much easier. Radios that offer sub-trim and end-point adjustments are the most desirable.

supplementary features are also desirable: look for end-point adjustments on both the steering and throttle functions; this allows you to tailor the movement of both servos. Exponential or rate

(Continued on page 66)

Talk Radio

Manufacturers make a lot of noise about transmitter modulation, but in my book it isn't a major factor. Modulation has to do only with how the transmitter and receiver communicate. As long as they do, that's fine with me. (A long dissertation on radio waves would be pointless and boring.) Basic radios are usually amplitude modulation (AM), mid-priced systems lean toward frequency modulation (FM), and the computer-driven systems are both frequency and pulse-code modulation (PCM). The transmitter and the receiver must be the same brand to work properly. AM radios have been the standard for years, and they work well for many gas and electric racers. I prefer FM systems at least, only because they are less susceptible to the metal-to-metal interference that frequently occurs with gas power. PCM signals are nearly incorruptible, but at the expense of battery longevity. Many PCM users link their systems to a larger external battery pack for safety.

adjustments are also convenient for sensitizing or desensitizing the "feel" of the controls.

These are the primary functions that you should be concerned with. Most mid-priced radios use conventional knobs for these adjustments. Computer-driven systems use both knobs and menu-driven adjustments. In my opinion, additional features can actually become a hindrance if you don't know how to use them properly.

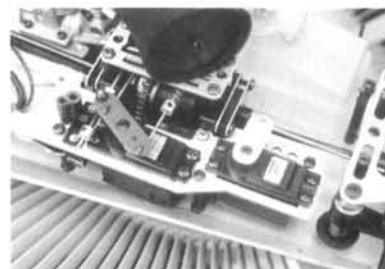
BAD VIBES

Weight and space aren't as relevant in gas models as they are in electrics, so

include some type of receiver mount that isolates the unit from vibration. Make sure that the unit is not securely mounted to the chassis. Some racers also encase the receiver in a balloon or a similar covering to shield it from fuel and debris. Large shrink material can also be used to cover and attach the unit and the connectors to the mounting platform. After each race day, remove the receiver and carefully clean its exterior.

A NEW TWIST

Servos are the muscles of the radio system. Most full systems are equipped with a pair of standard servos; depending



Most gas chassis will accommodate larger, more powerful servos. A lot of torque is required to keep 1/8-scale tires pointed in the right direction.

75oz.-in. of torque for steering and 40oz.-in. of torque for throttle/brake.

Caviar for Control Freaks

The more features a radio has, the more it's going to cost. But if you're among the financially fortunate and can afford to drop the coin on a high-end

radio system, here's a list of some of the more popular pistol-grip car transmitters.



▲ JR Remote Control* R-756. Able to switch from PPM to PCM, the 756 can store settings for up to six models. It features a helpful trim alarm, keypad trim adjustments and dial controls.

▼ Airtronics* Caliber 3P. The first pistol radio to feature an LCD screen, the Caliber is very user-friendly, and it can store settings for up to three models. Ergonomically, the Caliber is one of the most comfortable transmitters.



▲ Futaba* FP-T3PB PCM. This is the one that started the PCM craze. Though it isn't computer controlled, the 3PB has more than enough trim adjustment and settings for serious racers.

▼ KO Propo* EX-10. This radio has all of the R-756's many features, with a few cosmetic differences, such as wheel and case designs.



it's best to use a standard receiver rather than a micro version. Protecting the receiver from fuel and vibration is a more important consideration. Most kits

Engine vibration can cause radio problems. Always mount the receiver so that it's isolated from shock and vibration.



on the application, however, they may not be adequate. Certain hobby stores will trade-out the standard servos (assuming you bought them from the store), but I like to hang on to them for other applications. Each servo is rated by its torque, transit speed and size. When you're selecting servos, buy the highest-performance servo your budget will allow.

Torque is the maximum force that the servo is capable of exerting. Higher-torque servos are stronger, and they will increase steering or brake controls. Standard servos are adequate for most 1/10-scale on- and off-road cars, but off-road trucks require at least 40oz.-in. of torque for steering. Bigger 1/8-scale buggies and trucks require no less than

Transit speed reflects the servo's rotation angle and speed. Speed is important for steering and throttle response, and it enables the car to react more quickly. More aggressive driving styles need ballistic servos, but slower servos will improve smooth, flowing driving styles. There isn't one perfect choice, but quicker response will make the difference in a tight, door-to-door race.

Most gas chassis will accommodate both standard and high-performance servos. Size isn't a particularly important issue, unless you're trying to fit some throttle/brake servos between the chassis and the radio tray. You may, however, want to take special precautions to avoid damaging your servos if they're especially close to the heat of the engine or to

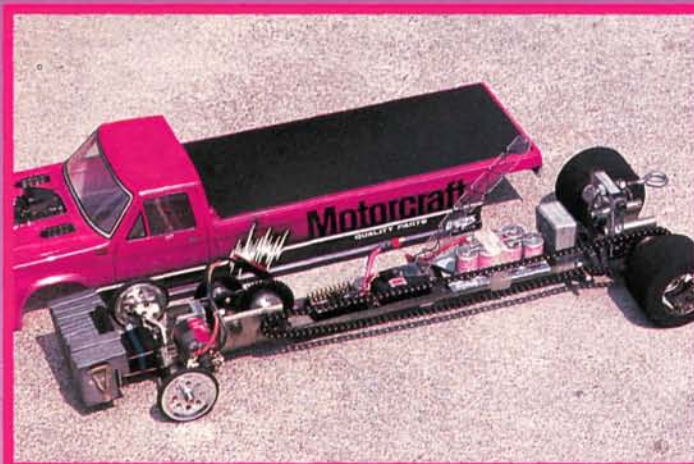
(Continued on page 102)



by JACK WRIGHT

Truck Pulling on a Budget

Penny-Pinching Puller



With the motor, the battery and the radio gear, the truck weighed only 3½ pounds, so I had to add 6½ pounds. Keep the truck light so that you can put additional weight where you need it.

THOSE OF YOU who are just starting out in the world of R/C pulling will find the 2WD Sportsman Class to be the easiest, most cost-effective and creative class of all. I'll show you how to build a competitive 2WD Sportsman puller—without breaking the bank.

JUNK-BOX PULLING

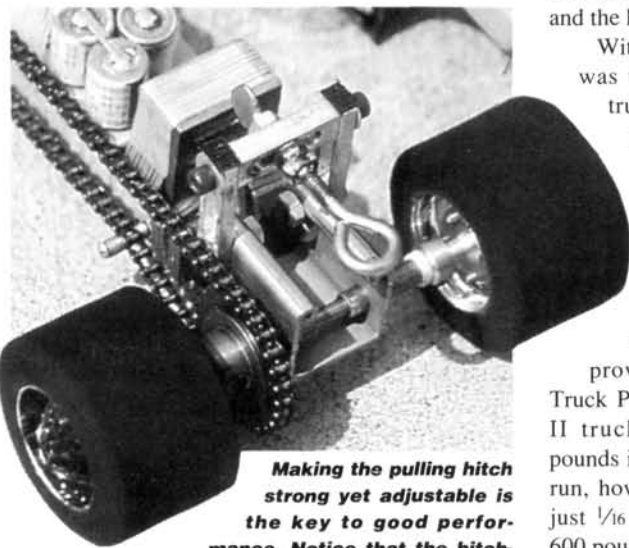
A Sportsman puller can be made of a variety of materials. For example, I used a section of light-fixture channel to make the chassis. Whichever material you choose, it should be light and strong. The light channel was ideal; I was able to cut it so that the sides would also act as the gearbox, the motor mount and the rear axle carriers. I had pretty much laid out my plan for building the truck before I started; the only area I was worried about was the tranny case because this is usually the most important

part of a pulling truck, and it's crucial to the truck's performance.

I started with the rear axle. Because this truck would compete on carpeted pulling tracks, I wanted the gearbox as far forward as possible for leverage purposes. To achieve this, I needed a way to get the power from the gearbox back to the drive axle. After a quick trip to the local Power Transmission store, I had the chain and sprockets I needed for my drive train. Chain drive is the most popular and effective way to get the power to the wheels, but it isn't cheap—about \$20 for the sprockets and about \$50 for 10 feet of chain. Of course, you won't need this much chain to build your puller. It helps to have a friend who's building a truck, too; this way, you can split the cost of the chain.

CHAIN REACTION

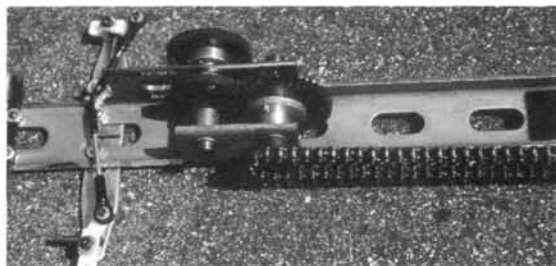
With the chassis cut out, I drilled the holes for the axle bushings that support the rear axle. Be sure to drill these holes as true as possible. A drill press is best, but if you take your time, a hand drill will also do the job.



Making the pulling hitch strong yet adjustable is the key to good performance. Notice that the hitching point is behind the axle, according to the rules.

The bushings I use are the same as those found in most entry-level on-road cars, such as the Bolink* Sport. I use bushings instead of ball bearings because bushings are less expensive.

I made the rear axle out of a 1/4-inch-diameter steel rod (available at most hardware stores). I put flat spots where the sprocket and the hubs would be mounted on



I picked up a heavy duty chain and sprocket at my local power-transmission store.

the axle. The flat parts give the setscrews in the sprocket and hubs a good solid bite on the axle.

After I had centered the axle on the chassis and installed the sprocket, I added a pair of Bolink left-side aluminum hubs. I use these hubs because they're inexpensive and they allow me to use foam tires. On carpet, foam tires are the norm, and most foams come mounted on on-road car wheels. By using the Bolink hubs, I was able to mount the wheels without making any modifications. To get the proper spacing between the tires and the frame, I put a 1/2-inch spacer on the right side of the axle between the chassis and the hub.

With the rear axle on board, it was time to install the pulling truck's most important component—the hitch. Why is the hitch important? How and where it's attached to the chassis plays a major role in transferring the motor's power to the ground when a heavy weight is pulled. To prove my point: at the recent Truck Pulling Nats, I saw an Open II truck struggle to move 600 pounds in its first run. In the second run, however, the hitch was raised just 1/16 inch, and the truck pulled 600 pounds for a full pull!

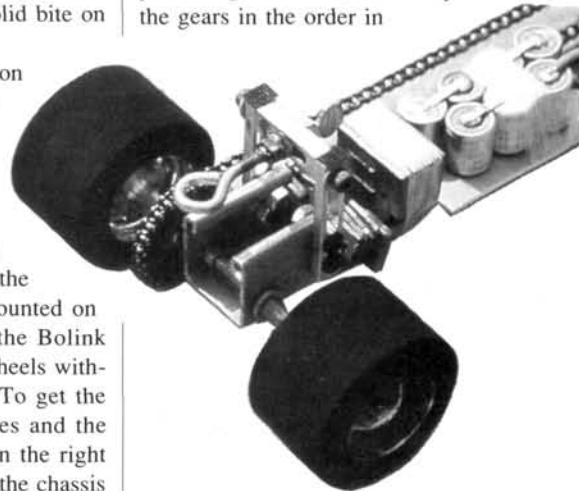
You can mount your hitch behind the axle or in front of it. I mounted mine in front of the axle, but the actual hitch point is 1/2 inch behind the axle to comply with the NR/CTPA (National R/C Truck Pulling Association) rules.

GEARS ARE CHILD'S PLAY

With the rear of the puller completed, it was time to move up front and build a gearbox for this rug rat. The ideal gear

ratio for a Sportsman puller is between 120:1 and 180:1. To determine which gears I'd need to provide the appropriate gear-ratio range, I started with the two main gears from the gearbox of a Power Wheels battery-powered kiddie car. (You can order these gearboxes from stores such as Toys 'R Us for about \$15.)

I drilled out the centers of the gears to accept 1/4-inch steel rods, which I secured with 4-40 setscrews. Before I drilled the holes in the chassis for the bushings to support the gear shafts, I lined up the gears in the order in



which they'd be mounted in the gearbox, and I measured the distance from the center of each gear to the next. Doing this will allow you to drill holes in the chassis in the correct places. As shown in the photo, the gears are installed from the smallest to the largest. Make the support shafts about 1/2 inch longer than needed.

At this point, take the gears off the shafts. With the bushing in the chassis, position each gear and slide the shaft through the bushing and the gear. I used a 1/4-inch wheel collar to secure the shaft on the main drive gear. On the other end, I used a Bolink 1/12-scale wheel hub. I did this to allow the use of a 90-tooth, 48-pitch on-road car spur gear, and the holes in the center of these gears line up perfectly with those on the hub.

After I had built the gearbox, it was time to cut out the slots for the motor mount. I started by drilling a 1/2-inch hole about 1 inch in front of the gearbox; then I drilled an 1/8-inch hole just above and below this hole. Using a Dremel tool with a small grinding bit, I slotted the holes to give the motor about 1 inch to move back and forth on the mount, as shown in the photos.

My final gear ratio was higher than I



What Do I Use For 4-Cell?

With the 4-cell season underway, this is a much-asked question. I used a 12-turn double in Joel's car last year to TQ and almost win in Cleveland, and this is how I had it set up:

Armature: 12-turn double 19. Team wind.
(no. R-212-T)

Setup: Championship Series "Pink Can"
(no. RC-4448)

Brushes: AG9 Silver compound, 50 percent cut
(no. RC-4525)

Springs: Light tension
(no. RC-4032)

Timing: 15 degrees

Gear: 100/25

Here are a few points to consider when you select a motor for 4-cell:

If you want:

	More punch	Less punch	More rpm
Armature:	Fewer turns	More turns	Fewer turns
Timing:	Higher	Lower	Higher
Spring:	Heavy	Light	Heavy
Can:	No holes	Holes	Holes

A good starting point would be a 13-turn armature in a good can setup with about 15 degrees of timing, half-cut brushes and light to medium springs. Can with holes is optional. Find the right gear, and this motor should work well on most tracks.

Also consider that batteries, tires, track and driving styles can affect the ultimate choice of your equipment. Sanyo SCRCs give more punch to your car, while Panasonic P-170s give more comfortable run time. Tires that bite better may be harder on run time but will usually be easier to drive. Track surface and condition need great attention. Carpet tracks can change so much and so quickly that it can be difficult for even the pros to keep up with them. If you're going to a track that you've never been before, get there early, ask questions and observe. Driving the car punched from corner to corner may seem fast, but it rarely is. Rolling the throttle and keeping the speed of the car as uniform as possible is how most races are won.

Oh yes, the two motors mentioned here are now available from Trinity.

RC-1790/Championship Series:
4-cell, 12 double
EX33513/EX Series: 4-cell, 13 quint

Until next month,
Neal McCurdy
Trinity Team Manager

ADVERTISEMENT

TRUCK PULLING

wanted, so I added a 2:1 gear-reduction unit from Bolink. Of course, adding just one more gear to the truck's gearbox would have put me right in the ballpark, but I didn't want to go through the hassle of making a new chassis.

THE POWER TO MOVE YOU

With the hard part out of the way, all you have to do is make a front axle and steering arrangement for the puller. This can be done in two ways: you can get a front axle from a Parma* sport truck, or you can make one from scratch. I made the axle for my puller out of kingpins and steering blocks from a Bolink oval-car kit and a scrap piece of aluminum.

For steering rods, I simply used some threaded rod and rod ends. The photos show how to set up the steering. As for front tires, any on-road car tires will work. I use a set of drag-car tires that had been sitting in my junk box.

For steering, I use a JR* servo and a JR PCM radio system. With only seven cells and a stock motor, almost any electronic speed controller will work. To avoid interference, mount the receiver as far from the gearbox and the motor as possible. You don't need to spend a lot of money on the radio, but use one of good quality. I've seen many good pulling trucks stopped in their tracks, not by the sled, but by their cheap radios or improperly installed receivers.

WEIGHTY DECISIONS

The last step in building the puller is to make a weight bar. With everything on board, my puller weighs around 3½ pounds. To get it up to the minimum NR/CTPA weight, I needed 6½ more pounds, so I made a weight bar to hang

weights from, and I mounted it on the front of the chassis.

At this point, check your truck's total length, including tires and weights, to be sure that it doesn't exceed the 24-inch maximum allowed by the NR/CTPA.

Any weight that's mounted outside the body must be scale in appearance. What is scale? The weights in the photos are considered scale. You can make your own out of lead, or you can buy formed weights—like the ones I used—from Mike's R/C Truck Weights and Accessories*. If you don't want to use scale weights, the rules allow you to conceal them in a box on the outside of the body.

Now the final touch—the body. For pulling, there isn't a wide range of available bodies. Parma makes the Ford puller body (shown in the photos) and a Chevy puller body. For those of you who want a tractor-style body, Parma offers an Art Arfrons Jet tractor body.

SERIOUS RUG BURN

Sportsman Class trucks must use stock motors. The NR/CTPA rule book defines a stock motor as any readily available R/C motor that has a fixed endbell, bushings and a retail price of less than \$30. There's a wide range of motors to choose from; I like the Kyosho* Mega 360 truck motors.

Selecting tires is quite a bit tougher than choosing a motor. For one thing, competitive foam pulling tires can cost as much as \$100. I find this outrageous. Because I was trying to build a low-cost puller, I chose to use standard Parma, blue-dot, compound foams mounted on a set of Parma Hemi Coupe chrome wheels. These don't have as much bite as the pink-dot pulling tires that cost almost four times as much, but I've found that they work well on most carpet tracks.

There's nothing like a trial by fire. I decided to put this puller to the test at the Northeastern Truck Pulling Nationals in Riverdale, NJ. This was one way to find out how competitive this truck could be. With almost 200 pounds in the sled, my home-built puller's best run of three was almost 29 feet—just 1 foot short of making it into the pull-offs.

(Continued on page 190)



Here's a look at the details of my homemade gearbox. You can design one for your truck in just about any way you want. You'd be surprised what you can do with just a handful of gears.



KYOSHO'S* NITRO THRASHER 4WD monster truck—with its powerful O.S. CZ-R engine, a convenient pull-starter, black Kelron, oil-filled shocks and 5-inch-tall monster tires—is a great vehicle right out of the box.

In the finest American gearhead tradition, however, I was determined to make this neat little truck even more awesome and powerful. I didn't need to look very far for hop-up parts, as both Kyosho and DuraTrax* offer numerous gas-car accessories that can be adapted to the Nitro Thrasher. So let's get started!

project

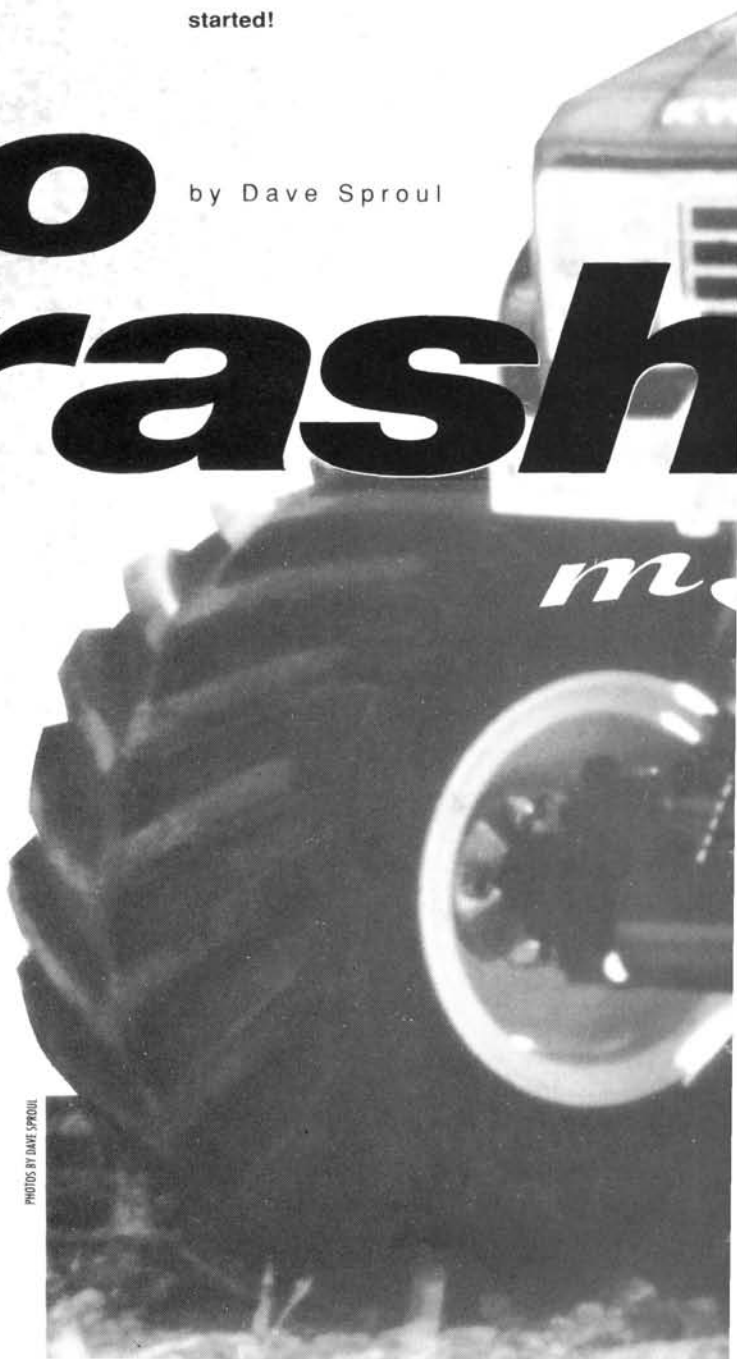
nitro Thrasher

by Dave Sproul

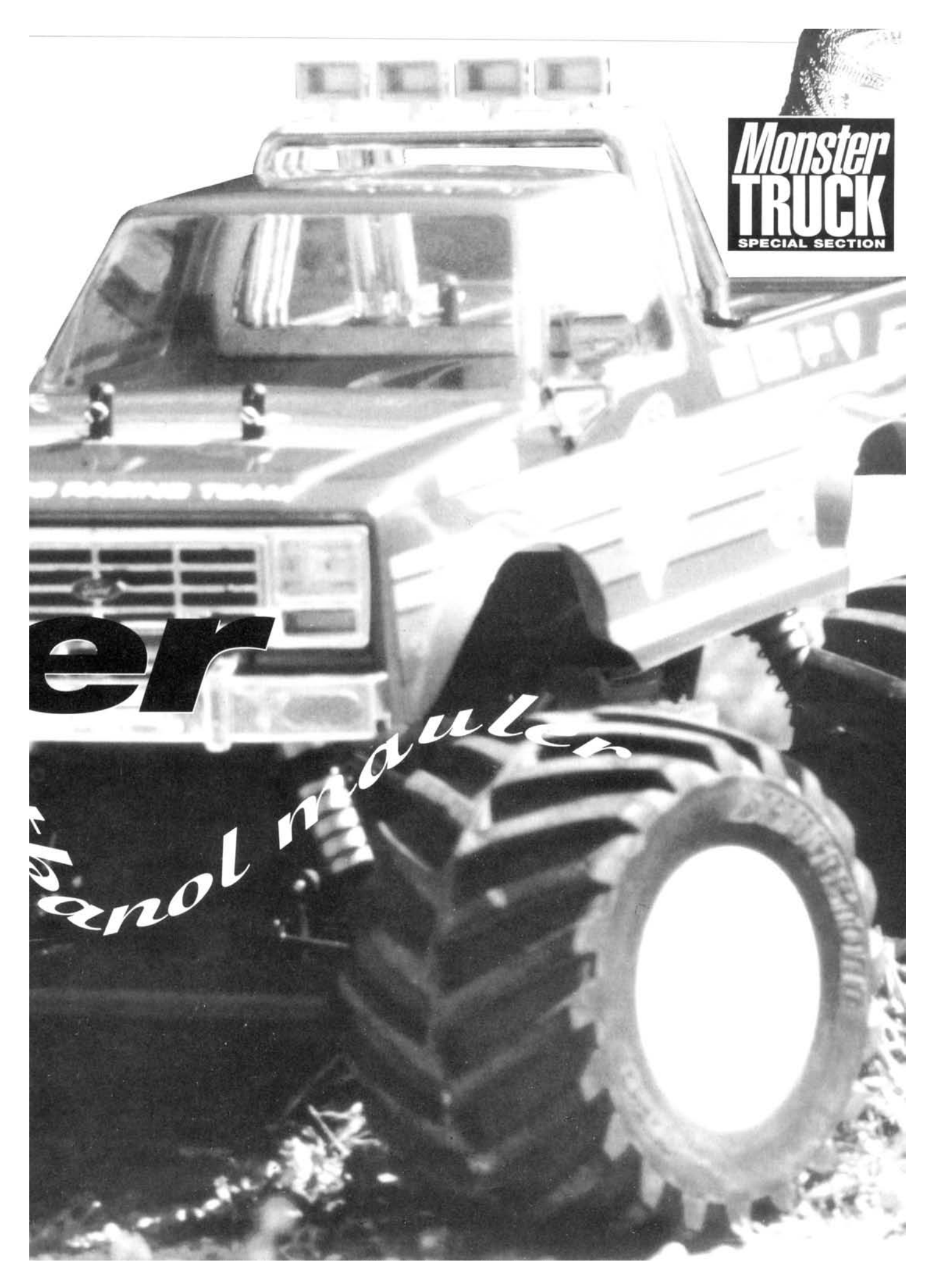
MODIFICATIONS

For smoother running, one of the first hop-ups that you should add to any R/C car or truck is a set of ball bearings. I use a set that Kyosho offers for the Thrasher. I also added Kyosho's FD-51 hardened diff gear to both the front and the rear diffs. I further reinforced the drive system with a set of MaxTrax* aluminum wheel hubs.

A DuraTrax Stage II high-performance cylinder head, a lightweight flywheel and a tuned pipe increase the horsepower of the CZ-R, and I improved the engine's durability by adding the new DuraTrax billet-aluminum connecting rod. I kept the stock



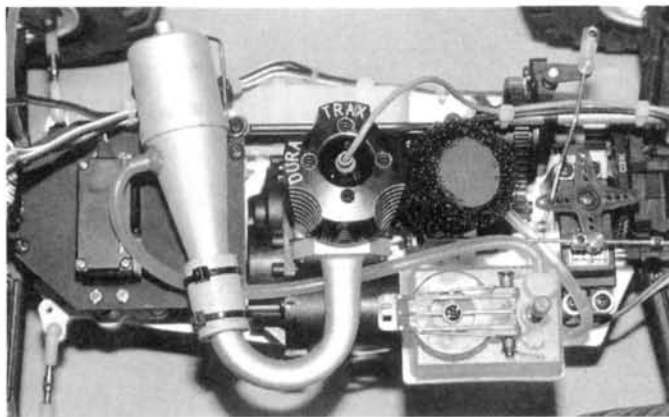
PHOTOS BY DAVE SPROUL



**Monster
TRUCK**
SPECIAL SECTION

er

anol mauler



This chassis shot shows the DuraTrax Stage II head, the tuned pipe, the two-stage air filter and the Kyosho 75cc flip-top fuel tank.

clutch bell, but I replaced the clutch shoes with heavy-duty shoes from Kyosho's 1/8-scale Inferno. A new, 75c flip-top fuel tank from Kyosho feeds O'Donnell* 20-percent nitro racing fuel to the stock O.S. carb. Air

filter. It's virtually a field box that fits in your pocket!

SUSPENSION

I replaced the stock black shocks (which are actually very good) with Kyosho's new Equalizer 4-inch shocks. They're incredibly smooth, and they feature a dust boot that prevents dirt from entering the O-rings. I chose the right spring from Kyosho's five-spring assortment, and I left the rest of the suspension stock.

STEERING

The steering system on the Nitro Thrasher is sloppy, to say the least, and it

THE MUCH IMPROVED STEERING IS THE MOST NOTABLE IMPROVEMENT IN PERFORMANCE. THIS IS FOLLOWED BY THE QUICK ACCELERATION OF THE MODIFIED CZ-R ENGINE.

was the most difficult to improve. After trying three bellcrank systems, I found a set of straight aluminum bellcranks that worked, but I had to move the steering servo, the battery pack and the receiver. To do all this, I had to custom-make a fiber-



The connection for the EG starter system is mounted on a custom bracket on the rear diff housing.

glass plate on which to mount the steering servo upside-down. I used a Kyosho servo-saver to connect the bellcranks to the servo, and I replaced the original linkage with Tecnacraft* titanium tie rods. To reduce bump-steer, I switched the left steering knuckle to the right side and vice versa.

I moved the Futaba* receiver to the front shock tower. It's powered by a

Parts List

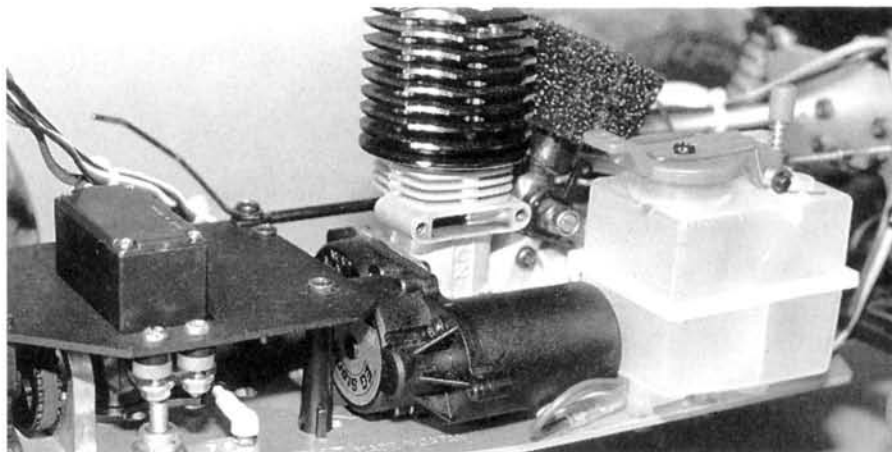
Item	Manufacturer	Part no.
1. Ball-bearing set	Kyosho	KYOC2209
2. Hardened diff gears	Kyosho	KYOC3508
3. Heavy-duty clutch shoes	Kyosho	KYOC2990
4. 75cc fuel tank	Kyosho	KYOC4015
5. Equalizer shocks	Kyosho	KYOC3477
6. Shock/spring assortment	Kyosho	KYOC5865
7. Stage II head	DuraTrax	DTXG1510
8. Billet conrod	DuraTrax	DTXG1600
9. Lightweight flywheel	DuraTrax	DTXG2510
10. Tuned pipe	DuraTrax	DTXG1100
11. Two-stage air filter	DuraTrax	DTXG2601
12. 600mAh battery	DuraTrax	DTXM2000
13. Aluminum wheel hubs	MaxTrax	MTXC0100
14. EG starter system	KO Propo	KOPG1000

filtration is handled by DuraTrax's two-stage filter element in a Kyosho RM-11 air-filter assembly.

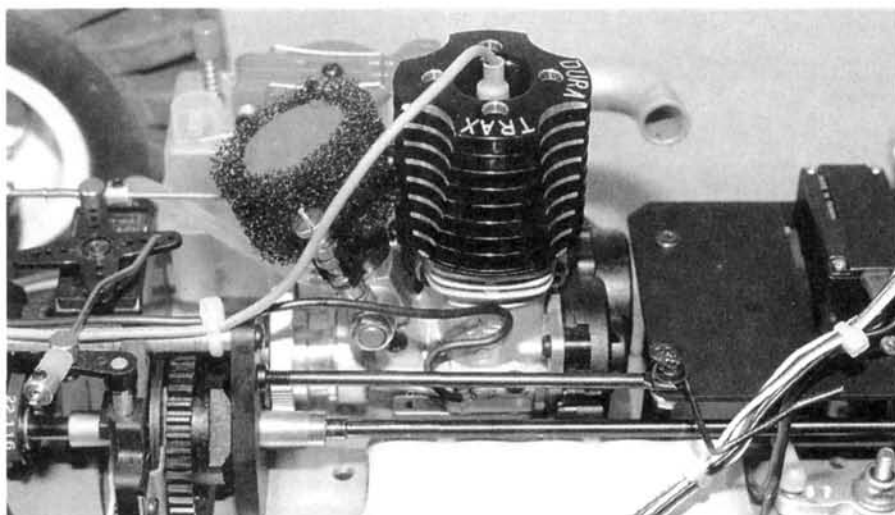
STARTER SYSTEM

I also added KO Propo's* new EG starter system—the trickiest one I've ever seen. The stock pull-starter is pretty convenient, but you still have to use a glow-plug driver with it. The EG system is a small gearbox and an electric motor that's bolted onto the engine in place of the pull-starter.

The supplied connector harness is plugged into the starter motor and the glow plug. The hand-held starter unit uses a standard, 6-cell flat battery pack with a Tamiya* connector. The unit features a



The EG starter gearbox is mounted on the rear of the engine in place of the pull-starter.



A DuraTrax 6V, 600mAh receiver battery powers the Futaba radio.

DuraTrax 5-cell, 6V, 600mAh Ni-Cd battery that's mounted where the steering servo once was.

RESULTS

The much improved steering is the most notable improvement in performance. This is followed by the quick acceleration of the modified CZ-R engine. The coolest mod by far, however, is the EG starter system. The convenience it offers is difficult to describe; in fact, you really have to see it to believe it. It certainly draws a huge crowd at my local R/C track.

Overall, the hopped-up Nitro Thrasher is a little "meaner" than it was before, and it's a blast to drive with the new-found horsepower. The Thrasher could be further customized with working headlights and roll-bar lights (both are available from Kyosho) and a really trick paint job, but then you might be afraid to drive it, and

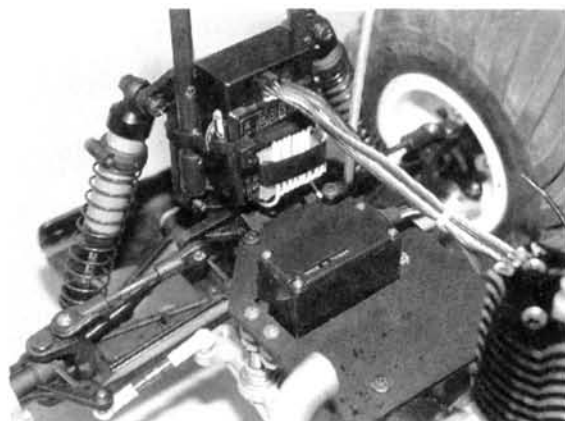


I use Kyosho's Equalizer shocks on all four corners. MaxTrax aluminum wheel hubs replace the original plastic pieces.

driving this cool little monster truck is fun!

I hope that those of you who already own a Nitro Thrasher will be inspired by some of these cool ideas. If you don't have one already, be sure to check it out. The Thrasher is a great truck for pure R/C fun!

[Editor's note: All you really serious gearheads out there—stay tuned. A feature article on an awesome, twin .21-powered USA-1 Nitro Crusher is in the works! Look for it in the '94 Radio Control Monster and Racing Trucks special!]

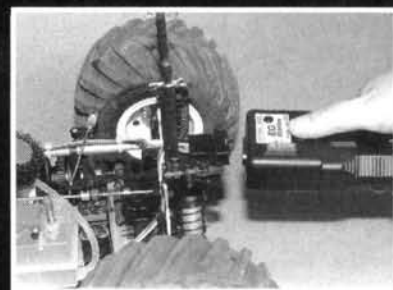


The custom fiberglass front radio plate is designed to hold the steering servo upside-down. I moved the receiver to the front shock tower and secured it with Velcro®-brand fastener and a nylon tie-strap.

* Here are the addresses of the companies that are mentioned in this article: Kyosho/Great Planes Model Distributors, P.O. Box 9021, Champaign, IL 61826; (217) 398-6300.

You Betta Start Me Up!

Adding the KO Propo EG Starter was one of the best modifications that I made to the Nitro Thrasher. The EG Starter replaces a starter box or recoil starter and a glow driver. Just press a button on the hand-held unit, and you're up and running! The EG Starter is smaller,



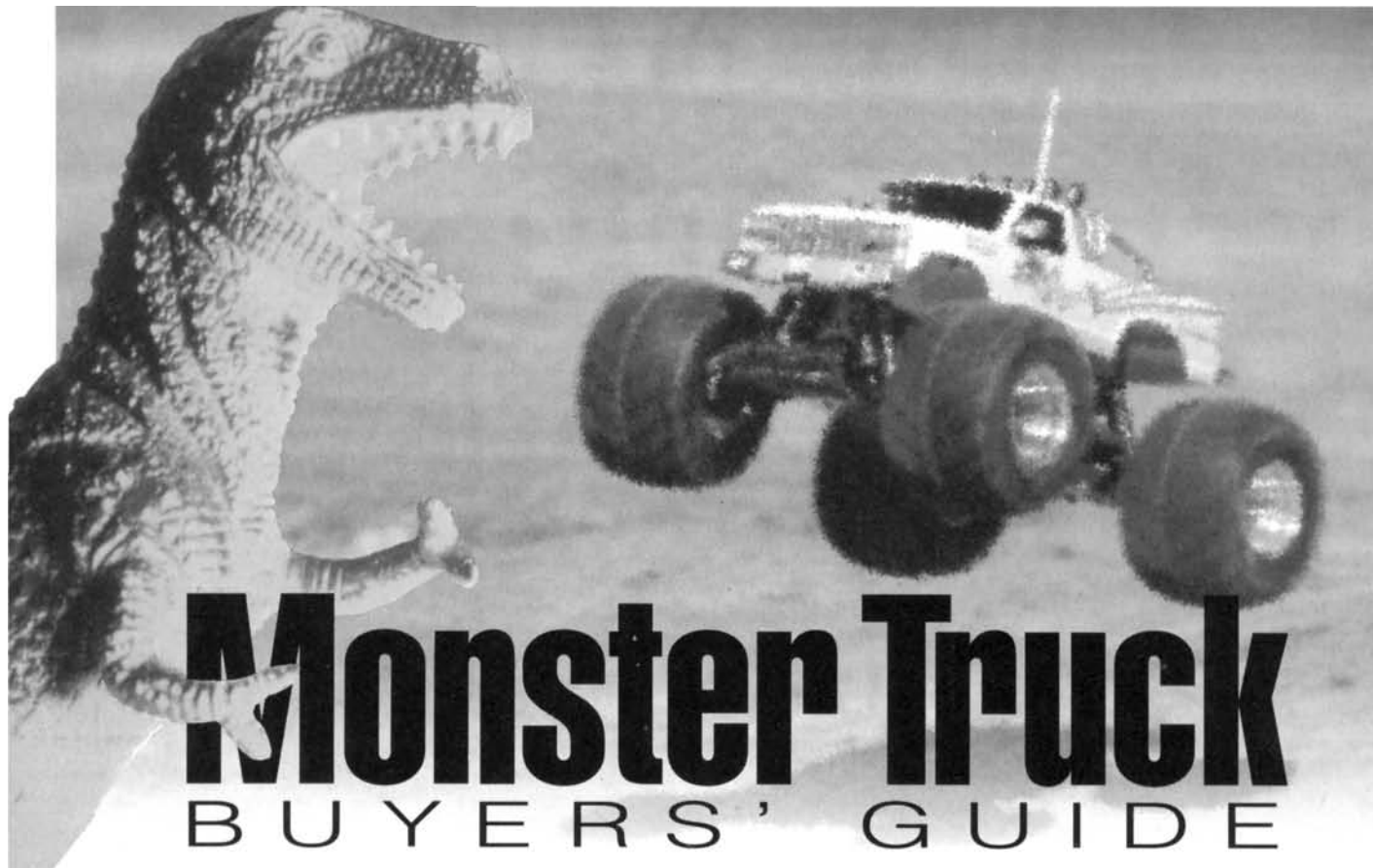
lighter and more portable than an electric starter. It's even faster than a recoil starting system—which makes it perfect for racing. With some minor modifications, the system fits gas cars, small planes, helicopters and boats.

The kit consists of a small gear box, an electric motor that's bolted onto the engine and a remote starting unit that's powered by a standard 6-cell Ni-Cd battery.

To start the engine, simply plug the remote starter into the connector harness and press the Start button. The unit sends power to the glow plug and the starter motor for quick, efficient starting. The on-board starter weighs only 3.75 ounces—only 1.5 ounces more than a recoil starter.

At this time, KO Propo offers EG Starters for both the O.S. .10 FP and the O.S. .12 CZ-R. Check with hobby dealers for availability.

DuraTrax/Great Planes Model Distributors.
MaxTrax; distributed by Great Planes Model Distributors.
O'Donnell Racing, 10702 Hathaway Dr., Santa Fe Springs, CA 90670; (213) 944-9671.
KO Propo, 25-10 Sendagi, 3-Chome, Bunkyo-ku, Tokyo, Japan.
Tamiya America Inc., 2 Orion, Aliso Viejo, CA 92656; (714) 362-2240.
Tecnacraft, 1335E Dayton St., Salinas, CA 93901; (408) 422-7466.
Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718; (714) 455-9888.



Monster Truck

BUYERS' GUIDE

DAHM'S



Camino 2000

This futuristic sport truck body is designed to fit most 1/10-scale cars and trucks, such as the Associated RC10L, the USA-1, the Blackfoot, the Super Blackfoot and the Tamiya Clod Buster. Formed of .030-inch-thick GE Lexan for lightness and strength, this outstanding body features aerodynamic styling and fine detailing.

Part no.—D199; **price**—\$20.98.



Ruff-E-Nuff

The Ruff-E-Nuff racing-truck body features narrow, aerodynamic styling, a sunroof, a custom cab extension, templates for number plates, a stadium race-truck spoiler with mounting hardware and Dahm's decals. Made of strong, light Lexan, it will fit most 1/10-scale racing trucks and monster trucks.

Part no.—D192; **price**—\$19.98.



U.S. Stock Car

If you want to turn your truck into a monster car, Dahm's has 12 stock-car bodies and pro-stock bodies that will fit most monster trucks. (The Type-L stock car racing body is shown here.) These race-winning, aerodynamic bodies come with adjustable, bolt-on rear spoilers and mounting bolts, and you can paint them to look like your favorite stock car.

Part no.—D133; **price**—\$19.98.



Buggsy

Buggsy is now available in 1/10 scale (fits the Clod Buster and the RC10T), 1/12 scale (fits the RC12LW, the Digger and the Lunch Box) and 1/8 scale (fits the Inferno and the Pirate)! This aerodynamic, fastback racing bug body is made of .030-inch-thick Lexan and has a chopped top, sleek racing fenders, a sunroof and a large, whale-tail spoiler.

Part nos.—D080 (1/10 scale), D043 (1/12 scale), D056 (1/8 scale); **price**—\$19.98.

MORE TRUCK FOR YOUR BUCK



Commando XL-8

The Commando XL-8 is Dahm's newest, most exciting 1/8-scale fastback racing-truck body! It will turn your 1/8-scale dune buggy into a sleek stadium race truck; it's also an awesome monster-truck body. It fits perfectly on most monster trucks, and, with long body-mount posts, it will also fit most 1/8-scale, gas, off-road cars. Made of .040-inch-thick Lexan for strength, it has rear vents, roll bars, rear tarps, an escape hatch, number plates and Dahm's decals.

Part no.—D057; **price**—\$22.98.



Super Sport 454

Dahm's new custom Super Sport 454 body is designed to fit most 1/10-scale cars and trucks. It's large, so it also fits most monster trucks. The 454 features a swept-back front end; a custom hood scoop with vents; number plates; a chopped top; wide wheel flares; and a tailgate spoiler.

Part no.—D125; **price**—\$20.98.



Tuff-E-Nuff

This custom truck body is designed to fit most 1/10-scale monster trucks. The Tuff-E-Nuff's features include aerodynamic, narrow styling; a molded-in supercharger with a scoop; flared wheel wells; side vents; a cab extension and fine detailing.

Part no.—D190; **price**—\$19.98.



Fever

This supercharged custom truck can be set up as a monster truck, an off-road truck, a puller, a mud bogger, a drag truck, or a hot low street truck. It has a custom cab extension and a molded-in supercharger with a scoop. The Fever is formed of .030-inch-thick Lexan for lightness and strength.

Part no.—D193; **price**—\$19.98.



Starfighter

This custom van body is designed to fit most 1/10-scale trucks. Painted to look like a custom Ford Aerostar van, it has a sunroof, five windows, a narrow racing profile, finishing instructions and Dahm's decals. Long body-mount posts might be needed to mount the Starfighter on some trucks.

Part no.—D196; **price**—\$19.98.



Thriller

Dahm's custom Pathfinder body—the Thriller—is designed to fit most 1/10-scale trucks and most monster conversions. Its features include a sunroof, wide wheel flares, fine detailing, finishing instructions and Dahm's decals. Long body-mount posts might be needed to mount the Thriller on some trucks.

Part no.—D191; **price**—\$19.98.

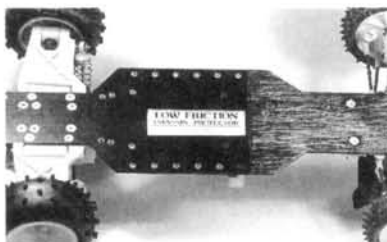


Avenger 2000

The Avenger 2000 will transform your ordinary truck into the truck of the future! It also fits most 1/10-scale on-road cars and most monster trucks. It features super aerodynamic styling, four side windows, Dahm's decals and finishing instructions.

Part no.—D195; **price**—\$20.98.

LITESPEED



Tuff-Stuff Chassis Protector

This self-adhesive sheet eliminates drag and wear caused by bottoming out. It also reduces high-speed aerodynamic drag! The 8x14-inch sheet is just .010 inch thick.

Part no.—0175; **price**—\$6.95.



Monster Truck Litesink

Litespeed has improved its Litesink motor heat sink. The new, black Litesink is lighter, has more than 17 square inches of heat-exchange area and fits most monster trucks. Mounted between the motor and the transmission, it provides run times that are 20 to 40 percent longer.

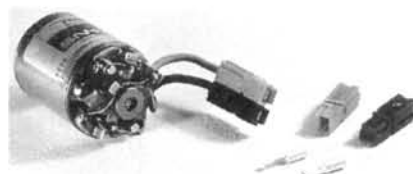
Part no.—1060; **price**—\$24.95.



Super-7 Silver Solder

Super-7 is the ultimate solder for low resistance and maximum performance. Litespeed's exclusive solder has the highest silver content (7 percent) and a safe, rosin flux core.

Part nos.—0165 (1/2 ounce), 0166 (1/4 pound); **prices**—\$2.95, 16.95.



Super-Con Connectors

Get longer run times and improve motor performance with Litespeed's Super-Con connectors, which have a lower contact resistance than any other R/C connector!

Part nos.—0150 (2 pr.), 0151 (10 pr.); **prices**—\$3.10, \$13.95.

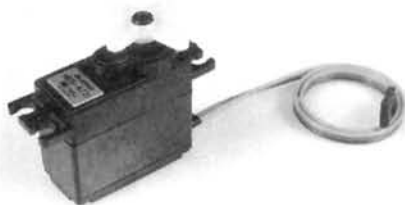
HORIZON



Competition Servo

The 4735 Competition Servo is used in the trucks of champions such as Jack Johnson and Kyle Reed. It puts out monstrous torque (90 oz.-in.) and blistering speed (60 degrees/.12 second). It uses dual ball bearings for precise operation and durability, and it's water- and fuel-resistant. Special plastic gears provide strong operation with no backlash or receiver-disrupting RF noise.

Part no.—JRPS4735; **price**—\$99.95.



Ultra Torque Servo

When you need brute power in a truck servo, look to the JR 4721 Ultra Torque Servo. The 4721 puts out 119.6 oz.-in. of torque to move massive monster-truck steering with ease and precision. Even with such awesome power, it pumps out a blistering .15-second/60-degree transit speed. Best of all, it's the same size as any standard servo.

Part no.—JRPS4721; **price**—\$99.95.

BENNETT



Clod-A-Leaver Suspension Kit

This championship-winning suspension kit includes stainless-steel torsion sway bars; all-new steering, including a gearbox-mounted servo mount; 6-32 high-strength ball ends; 3/16-inch stainless-steel rods to replace the ladder bars; cantilever shock mounts; full chassis braces; stainless-steel bolts and hardware; and an illustrated instruction booklet. It fits all production chassis—from stock plastic to the ESP Ladder.

Prices—\$249 (2WS), \$293 (4WS).



Pro Puller IV

The Pro Puller IV is a front-motor pulling chassis for the NR/CPTA Open Class I or the Sportsman Class. The rolling chassis comes fully assembled; it has an aluminum frame; metal final-drive gears and sprockets; bearings; an adjustable rear hitch; foam rear tires mounted on plastic rims; and a Bennett exclusive hex rear axle for positive gear and hub retention. Bodies, motors and electrics are available separately.

Prices—\$399 (complete rolling chassis), \$525 (with a Zeta Electro Silver speed controller).



Pro Puller II, XL and III

These Pro Puller models share these important features: aluminum gearboxes, aluminum main-drive gears and rubber, bar-tread tires. The Pro Puller II comes with a bushing-equipped gearbox and a fixed hitch; the Pro Puller XL includes a ball-bearing gearbox, chrome rims and an adjustable hitch; the Pro Puller III has all the features of the XL, plus a 24-pitch rear gear for increased durability and a heat-treated stainless-steel pinion. These chassis are best suited to dirt pulling in the NR/CPTA Open I or Sportsman Classes.

Prices—\$229 (Pro Puller II), \$299 (Pro Puller XL), \$329 (Pro Puller III).

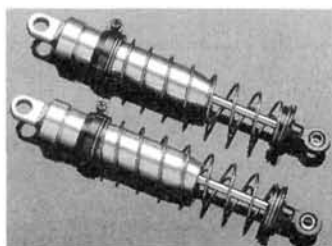
DURATRAX



Powerline Monster-Truck Motor

Ideal for off-road truck racing and other high-torque applications, the DuraTrax 18x1 machine-wound, modified monster-truck motor offers excellent performance at a low price. Contributing to its power are 4.9mm wet magnets; a 1.3mm can; a heat-sink endbell; ball bearings at both ends; high-silver-content brushes; a precision, machine-wound, balanced and epoxied armature; adjustable timing; a diamond-trued commutator; and capacitors that eliminate electrical noise. Maximum rpm is 30,000.

Part no.—DTXC3110; **price**—\$44.95.



Competition Shocks

Shocks are the first choice for hop-ups, and these high-quality shocks are attractively priced. Available in 4-inch sets, each features a gold-anodized body, a ball end and a silicone O-ring seal that prevents leaking. Just add oil, and they're ready to install on most monster trucks.

Part no.—DTXC3501; **price**—\$24.95.



Street Trac Tires

High-grip Street Trac molded-rubber tires feature a tread pattern that's perfect for all on-road surfaces, and, on dusty tracks, they provide more traction than slicks. They're sold in pairs.

Part no.—DTXC8005; **price**—\$12.95.



V-Spike Tires

Some track conditions require more than ordinary tires. Riding on these unique V-spike treads, your Clod Buster or USA-1 monster truck will be ready for nearly any off-road terrain. DuraTrax V-Spike tires are manufactured of 100-percent-natural and synthetic rubber so that they'll easily withstand the pounding of the roughest tracks. They're sold in pairs.

Part no.—DTXC9112; **price**—\$19.95.



Ball-Bearing Sets

By outfitting your Clod Buster, Blackfoot, or Super Blackfoot with a complete set of DuraTrax ball bearings, you'll greatly reduce friction and see improved performance under any conditions—at a very low price! Made of 100-percent stainless steel, DuraTrax bearings are long-lasting, too. The Clod Buster set includes 20 bearings; complete sets of 10 are also available for the Blackfoot and the Super Blackfoot.

Part nos.—DTXC1070 (Clod Buster), DTXC1020 (Blackfoot), DTXC1113 (Super Blackfoot); **prices**—\$74.95, \$29.95, \$24.95.



2-Channel Mini AM Receiver

Designed for use with 2-channel AM radios, DuraTrax 27MHz and 75MHz receivers are ideal for use with monster trucks. Each measures 1.1x1.28x0.53 inches and weighs only 0.5 ounce—smaller and lighter than most expensive styles. They're factory-tuned to provide efficient, low-voltage operation. Just add a Futaba AM crystal and install! They accept Futaba J connectors.

Part nos.—DTXL0127 (27MHz), DTXL0175 (75MHz); **price**—\$62.95.



DTX-4 Electronic Speed Controller

Built as well as more expensive speed controllers, the DTX-4 delivers pro-quality acceleration and response at an affordable price. Made in the USA, the unit features overload-preventing Tempfet technology and surface-mount technology for efficiency and reliability. It includes a universal connector for all popular radio systems and 120-day warranty protection.

Part no.—DTXM1000; **price**—\$99.95.



Field Bag

This sturdy, attractive tote provides storage space and handy pockets for organizing and transporting your model, radio, tools and accessories. Made of washable, red and black nylon, the DuraTrax bag is fully collapsible for storage, and it can be set up easily using the attached hook-and-loop fasteners. Removable, adjustable shoulder straps add to its convenience. The size (22x12x10 inches) is perfect for monster trucks.

Part no.—DTXP1205; **price**—\$31.95.



.12 CZ-R Stage II Head

In the DuraTrax tradition of performance and value, this black-anodized head for the O.S. .12 CZ-R engine features a newly engineered combustion chamber and low deck for improved performance. Compared with the previous DuraTrax CZ-R head, it offers 18-percent-greater surface area, and this improves its cooling capability.

Part no.—DTXG1510; **price**—\$44.95.



Stage II Air Filter

Reusable DuraTrax pre-filters and filter elements for .12 and .21 engines are based on those used in full-scale motorcycle racing, and they last up to 10 times longer than ordinary styles. They also trap more dirt to protect your engine.

Part nos.—DTXG2600 to DTXG2610; **prices**—\$3.50 to \$12.95.



5-Cell Receiver Battery Packs

These 5-cell, 6V, rechargeable receiver packs supply more voltage than standard 4-cell packs, and this provides increased servo torque and faster reaction time. The light, 600mAh style is ideal for 1/10-scale gas models. Perfect for 1/8-scale gas vehicles, the 1000mAh packs offer the most power available in a receiver pack. Each includes a Futaba J connector.

Part nos.—DTXM2000 (600mAh), DTXM2005 (1000mAh); **prices**—\$29.95, \$39.95.



SRT .21 ABC Engine

An affordable alternative to expensive racing engines, the race-proven SRT with slide-valve carb provides a lot of bottom-end torque and ample top-end power. It's a strong match for any 1/8-scale model, including Kyosho's USA-1 Nitro Crusher.

Part no.—DTXG0100; **price**—\$199.99.



1/8-Scale Starter Box

The sturdy, metal starter box makes starting engines in monster trucks and 1/8-scale cars and buggies a fast, easy, one-person job. Pegs align the engine's flywheel with the starter wheel of the included 12V electric starter. Alligator clips are provided for connecting the box to a power supply, and complete instructions are included.

Part no.—DTXP5000; **price**—\$99.95.

KYOSHO



USA-1 4WD Electric

The double punch of 4WD and 4WS makes this 1/10-scale electric nearly unstoppable. Twin motors, rotary speed control, eight shocks, metal bushings and a heavy-duty, adjustable suspension are included. You'll need a 2-channel radio, a 6- or 7-cell battery and a charger.

Part no.—KYOC0242; **price**—\$319.95.



Tracker 2WD

Kyosho's Tracker is an easy-to-build, easy-to-run car crusher that has been beefed up with competition-proven engineering to provide higher torque, firmer handling and faster speeds than any comparable electric monster truck. In addition to a 550 motor and oil shocks, the Tracker has an advanced power-delivery system that enables you to adjust the gearing to suit any track condition.

Part no.—KYOC0215; **price**—\$169.99.



Nitro Thrasher 4WD

This powerful, 17-inch-long gas monster truck unleashes more speed, longer run times, stronger climbing ability and more realism than electrics. The kit includes a recoil-started O.S. .12 CZ-R engine, a fuel bottle and a glow starter. A 2-channel radio is required; a heavy-duty steering servo is recommended.

Part no.—KYOC0520; **price**—\$459.95.



USA-1 Nitro Crusher 4WD

Kyosho's biggest, most realistic monster truck—the 19.7-inch-long USA-1 Nitro Crusher—combines scale realism with a heavy-duty design

that features an aluminum chassis, a shaft drive, three gear diffs, bronze bushings, a double-wishbone suspension and oil-filled shocks. It requires a .21 buggy engine and a 2-channel radio. **Part no.**—KYOC0525; **price**—\$479.95.



Toyota 4Runner

With eye-popping accuracy, Kyosho's 1/9-scale Toyota 4Runner 4WD reproduces a number of details: wipers, door mirrors, chrome-plated bumpers, Bridgestone Desert Dueler off-road tires and more! When the body comes off, the realism goes on: Kyosho duplicates the 4Runner's multi-link, live-axle rear suspension, independent front suspension and shocks, too! Also included are a 360 Monster Truck Mega motor, a heavy-duty rotary speed controller and a mount for an optional second motor. You'll need a 2-channel radio, a 6-cell battery pack and a charger.

Part no.—KYOC0244; **price**—\$399.95.



Nissan Pathfinder 4WD

Get set for a back-country blast with this 1/9-scale, 21-inch-long 4WD! The Nissan Pathfinder is true to the original, inside and out—from the multi-link, live-axle rear suspension and independent front suspension to the accurately scaled Lexan body. Wipers, door mirrors, chrome-plated bumpers, Bridgestone Desert Dueler off-road tires and more take scale realism to the extreme. Kyosho includes a 360 Monster Truck Mega motor, a heavy-duty rotary speed controller and track-taming shocks for your off-road explorations. A 2-channel radio, a 6-cell battery and a charger are required.

Part no.—KYOC0245; **price**—\$399.95.



Fog and Headlight Set

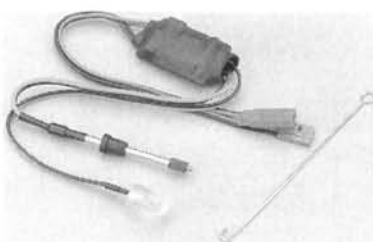
Keep on truckin' after the sun goes down with these realistic, easy-to-install fog-light and headlight sets. They're ideal for all Kyosho monster trucks, and they can be modified for use with other cars and trucks. Each set comes with clear lights (two headlights or four fog lights), all wiring, an on/off switch and battery holders. Add two AA Ni-Cd or alkaline batteries, and roar on into the night! **Part nos.**—KYOC4427 (fog lights), KYOC24428 (headlights); **prices**—\$16.95, \$9.50.



Big Boss 2WD

This 1/10-scale crusher inspired a full-size Big Boss! It's 18.3 inches long, 10.4 inches high and almost a foot wide. And it's topped off with a precisely scaled Ford F-250 body whose features include chromed lights, rims, roll bar, bumpers, grill and side mirrors; a V8 engine; and awesome decals! Beneath the beauty, you'll find a 4W, independent, double-wishbone suspension; oversize shocks; a fully enclosed gearbox; 3+1 manual speed controller; and a Le Mans Stock .05 motor—machinery that lets the Boss take command of any terrain! It requires a 2-channel radio, a 6-cell battery pack and a charger.

Part no.—KYOC0225; **price**—\$179.95.



Fuel Warning Light

A must for any glow-powered monster truck, this visual alarm tells you when it's time to refuel. It plugs into the fuel tank, and it borrows power from the receiver battery pack. Mounting hardware, Futaba connectors and instructions for installation with all popular radio systems are included.

Part no.—KYOC3977; **price**—\$49.95.

KO PROPO



EG Starter System

KO Propo's EG on-board electric starter system is like an entire field box of engine-starting equipment in one compact, hand-held package! Its small gearbox and electric motor mount on your engine, replacing the pull-starter. Just plug the included hand-held starter unit into the connector harness, and push the start button; the EG system instantly powers the glow plug and the starter system and starts your engine. The EG Starter System weighs only 3.75 ounces and is powered by a standard 6-cell Ni-Cd pack with a Tamiya connector. It's available for the O.S. .12 CZ-R and the .10 FP.

Part nos.—KOPG1000 (.12 CZ-R), KOPG1010 (.10 FP); **price**—\$119.99.

ESP



Aluminum Ladder-Frame Chassis

ESP's aluminum ladder-frame chassis is much stronger than stock plastic versions. It's the lightest aluminum Clod Buster or Bull Head chassis available, and it's perfect for racing or pulling. It comes with a lift kit, a chassis brace and mounts for the radio tray, the shocks, the front bumper and the batteries.

Part no.—ESP028; **price**—\$69.95.



Twin-Tube Lower Bumper for Clod Buster and Bull Head

ESP's twin, heavy-duty aluminum lower bumpers protect the gear case and are the perfect match for ESP's front and rear twin-tube bumpers.

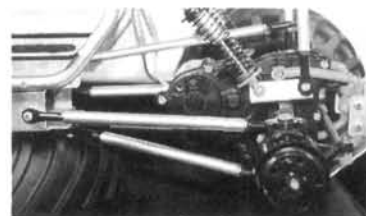
Part no.—ESP003; **price**—\$16.95.



Clodzilla Lever Floating Shock-Mounting System

Designed for use with ESP's ladder-frame chassis and multi-link suspension kit, the new Clodzilla lever floating shock-mounting system provides Clod Busters and Bull Heads with the ultimate in suspension technology. Owing to a revolutionary design, the system actually compresses the shock absorber from both ends. This allows for true rising-rate action and provides incredible handling over jumps and rough terrain. (The system requires four oil-filled shocks.)

Part no.—ESP035; **price**—\$49.95.



Clodzilla Long-Wheelbase Multi-Link Suspension Kit

This long-wheelbase kit provides greater straight-line stability, and it has longer control arms to increase wheel travel. The caster is adjustable,

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Monster Truck BUYERS' GUIDE

and it operates consistently throughout suspension travel to eliminate the bump-steer that's common with the stock suspension.

Part no.—ESP032; price—\$79.95.



Complete Clodzilla Racing Kit

This kit will allow you to really trick out your Clod Buster/Bull Head! It includes a Clodzilla aluminum racing chassis, a Clodzilla Long-Wheelbase Multi-Link Suspension Kit, heavy-duty aluminum steering rods and aluminum body mounts. Just bolt the parts onto your model's stock drive train, and you'll have a race-ready monster truck!

Part no.—ESP034; price—\$189.95.

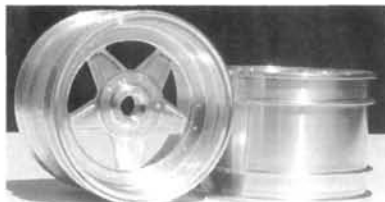
JPS



Clod Buster/Bull Head Aluminum Wheels

Outfit your Clod Buster/Bull Head with these stunning machined-aluminum wheels. Available in 15 custom designs, these custom wheels are the finishing touch that will make your truck stand out in the crowd.

Price—\$75/pair.



MRC World Scale Aluminum Wheels

JPS now offers beautiful, machined-aluminum wheels to fit the MRC World Scale Thunder King. Available in several styles, including the center-

line-style "Circles," the classic "Deluxe Stars" and the new "Tri-Blades," these wheels will make your World Scale truck stand out in the crowd!

Price—\$75/pair.



Super-Strong Servo-Saver Assembly

The latest addition to JPS's line of machined "Killer Clod" parts is this extra-heavy-duty servo-saver assembly. It's machined of solid aluminum and brass for high strength and low weight, and it features O-ring grease seals and all the necessary mounting hardware. For truck-pulling competition, the servo-saver can be locked up solidly, eliminating slop in the steering system for straight, consistent performance.

Part no.—7072; price—\$38.



Aluminum Ladder-Bar Caps

Here's another hot item for Clod Buster/Bull Head owners. Machined of high-quality, solid aluminum, these ladder-bar caps will greatly increase the strength of your truck's ladder bars. They come with two extra nylon bushings and a complete set of steel mounting screws. Use them to beef up your stock truck, or pair them with JPS's new solid-aluminum ladder bars to build the ultimate "Killer Clod"!

Part no.—7071; price—\$59.



Aluminum Gearboxes

These sharp-looking 6061 aluminum gearboxes from JPS are designed for pullers, and they take stock or after-market gears. The cases are engineered to be adjustable; they're slotted to accept pinion gears that are larger and smaller than stock ones. JPS also offers steel gears for their gearboxes.

Part no.—7000-1; price—\$150.

INDEX OF MANUFACTURERS

Dahm's Racing Bodies, P.O. Box 360, Cotati, CA 94931; (707) 792-1316.

Litespeed, P.O. Box 4765, Spokane, WA 99202; (509) 535-2717.

Horizon Hobby Distributors, 4105 Fieldstone Rd., Champaign, IL 61821; (217) 355-0022.

Bennett Equipment, 900 E. 1300 South, Romney, IN 47981; (317) 538-2725.

DuraTrax, Kyosho, KO Propo; distributed by Great Planes Model Distributors, P.O. Box 9021, Champaign, IL 61826; (217) 398-3630.

ESP Mfg., 20 Crystal Lake Plaza, Crystal Lake, IL 60014; (815) 455-5440.

JPS Racing Products, P.O. Box 746, Lakehead, CA 96051; (916) 238-8122.

Cheap Power Tricks!

by JOHN HUBER

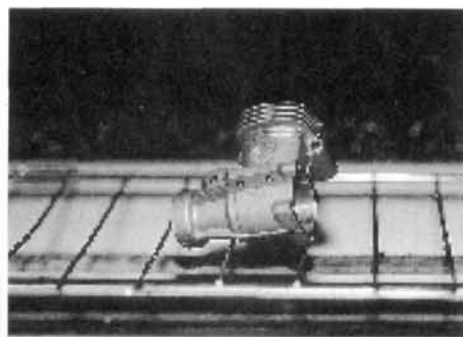
More Power & Efficiency

I don't claim to be an engine-tuning guru, but I know what it takes to make my O.S.* CZ-R tick like a clock. I first became familiar with the engine a couple of years ago, when I got my A-Main* truck. The engine that came with it had been modified by Kunio Dudgeon (who had done some work on the crankcase), and it ran very well. I've been experimenting and have gone a bit further.

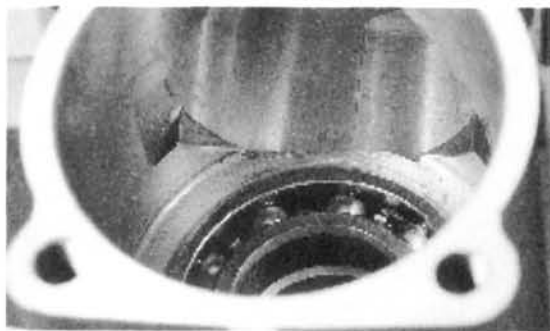
I have friends who have modified engines that scream but have poor fuel economy. My goal was this: to increase fuel flow through the crankcase without opening any ports or altering the timing. I figured that if I kept the stock porting, fuel economy would stay the same, and by increasing the flow, I'd be able to develop more power.

Take a look at what I came up with; it worked for me and is relatively simple. Do *not* try this if you aren't skilled at working with power tools. You'll need goggles, a Dremel tool and a selection of bits.

O.S. CZ-R Mods



1 First, remove everything. To get the bearings out, heat the crankcase at 350 degrees for 10 minutes. Then grab the engine with a potholder and give it a tap onto a cutting board. The bearings should drop right out, but be careful—they'll be very hot. Don't let them fall on the counter, because they might melt it.



2 I removed a lot of the crankcase material with a Dremel tool. Smooth the case around the bottom of the sleeve so that fuel will pass around it more easily. (Be careful near the holes tapped for the backplate screws: don't break through to them.)

Recently, when I was cleaning my oldest O.S. CZ-R engine, I noticed unusual wear on the crank-

pin and the backplate. Only about the outer half of the pin had signs of wear, as though it had been polished; the inner half was dark and looked like the other non-contacting parts. I know that the backplate is there to keep the connecting rod on the crankpin and that it usually shows signs of wear, but something didn't seem right. Apparently, the backplate wasn't holding the conrod in place.

I reassembled the engine, leaving the backplate off. Instead of pushing the bottom of the conrod all the way onto the crankpin, I left it halfway off. Then I pushed the backplate on to see how much it would move the conrod. When I removed it again, I was amazed to see the conrod still nearly halfway off. This means that as the engine runs, the rod can work its way halfway off the crankpin, so that it's only half as strong as it should be.

Although the best way to remedy this situation is to make a better backplate, there's a cheaper way to fix it temporarily. To prevent the rod from wandering on the crank, you can add a spacer to the top of the rod. If it doesn't move up top, it won't move down below.

Connecting-Rod Spacer



PHOTOS BY JOHN HUBER

1 The spacer must be installed on the piston pin, between the rod and the inside of the piston. First, I tried using a shock O-ring, but, at high rpm, it detonated. →



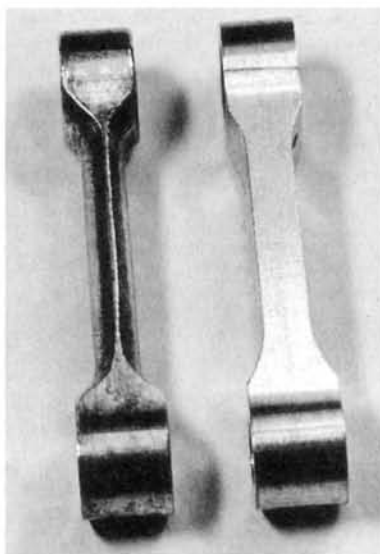
3 If your engine has been used before, you'll see marks in the case where the ports line up. Using a ball bit at slow drill speed, I made smooth channels in the case to help lead fuel up to the piston. I also made a mark where the port in the piston lines up.



4 The sleeve is unusually thick, and that makes it hard for fuel to pass around the bottom edge. Without enlarging the opening to the piston, I removed material from the outside of the sleeve to match the work I had done to the case. I think of this as clearing out the hallways and rounding the sharp corners without enlarging the doorways.



5 To smooth the exhaust exit, I cut the bottom and sides of the exhaust port on a 45-degree angle to match the opening in the case. Again, I didn't open the port itself.



6 You might not want to go this far, but I knife-edged the RPM* rod and polished it so it would cut through the fuel with ease. Because I use a steel flywheel, I'm not worried about the little change I made to the balance.

TEAM LOSI

TECH TALK

IT'S HERE!

By the time you read this month's Tech Talk, the all-new Double-X car should be available. The Double-X is the result of two-and-a-half years of design and testing by Team Losi. I'm sure that you will find the production version well worth the wait!

The Double-X is a completely redesigned car from the ground up. It utilizes many of the advanced materials used in other Team Losi cars and trucks, and some new materials.

The Double-X was designed with racing in mind. It's easy to drive and very user-friendly. In the design stages, every measure was taken to make the Double-X easy to maintain and work on. This was done by eliminating many of the screws and grouping components.

The new Double-X has been very successful on the track so far. In its first outing at the IFMAR World Championships, the Double-X took the top two qualifying positions by more than two seconds. Just wait 'til the team gets some time on this car!

MAKE 'EM STICK!

If you've been having problems getting your tires to stick to your wheels when gluing them, try cleaning off the wheels and tires first with rubbing alcohol. Clean the mounting area of the wheel, then the mounting bead of the tire. After both have dried thoroughly, glue the tires to the wheels. The clean surfaces allow a much better bond. Don't use a cleaner other than rubbing alcohol—it might leave an oily film behind.

WELCOME ABOARD!

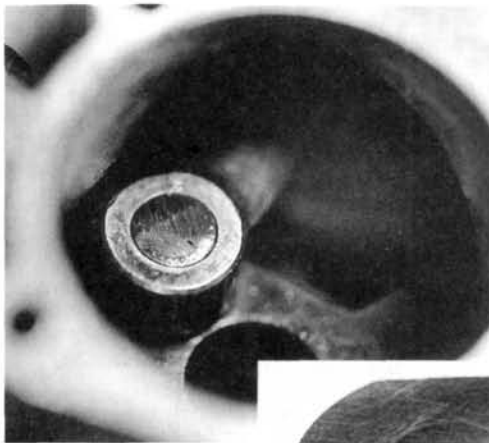
Team Losi would like to welcome its newest members. First is Rick Hohwart. Rick is a very accomplished driver in both on-road and off-road racing. We are all very happy to have Rick as a part of Team Losi. We would also like to welcome Steve Chamberlin. Steve works closely with Rick at Peak Performance and is a very talented driver and setup ace. Scott Roberts and Chris White complete the list of new additions to the racing team. Chris and Scott are two very talented drivers with many wins to their credit. The additions of these drivers should make for a very successful year for Team Losi in '94!

Let us know what's going on! Address your questions and problems to Team Losi, "Tech Talk," 13848 Magnolia Ave., Dept. J, Chino, CA 91710.

Connecting-Rod Spacer



2 I ended up using an aluminum HPI* cone spacer, because it's very close to being the right thickness and diameter and is also very light. I enlarged the spacer's hole with a drill bit so it fits tightly on the piston pin. Then I reduced the spacer's outside diameter slightly by sanding it with a drill sander, and I also sanded the washer to remove burrs. (before and after)



4 Once you feel satisfied, test-fit the parts on the engine. Install the piston and rod in the usual way, but be very careful when you install the sleeve. If it feels a little tight, the washer might still be too thick. (Proper thickness allows the parts to slip together.) There will be slight movement on the bottom and top of the rod once it has been assembled.



3 Check carefully to be sure that the conrod sits in the middle of the piston pin. If it doesn't, the spacer is too thick. Re-sand the spacer slightly and check it again (RPM high-performance rod shown).

5 And that's it! To see if my modification had done the trick, I polished the inside of the back-plate. After half a gallon of fuel, there were no marks of any kind, and the conrod had worn evenly on it!

You could do more to the engine, but I think that it works well enough with only these mods. I get more than 10 minutes of run time with a 75cc tank—a little less time than with a stock engine, but it goes a whole lot faster!

*Here are the addresses of the companies mentioned in this article:

O.S.; distributed by Great Planes Model Distributors, P.O. Box 9021, Champaign, IL 61826; (217) 398-3630.
A-Main Racing, 3731 W. 95th St., Overland Park, KS 66204; (913) 383-9481.
RPM (Richardson Precision Machining), 5070 Golden Dr., San Jose, CA 95129.
HPI, 22600-C Lambert St., Ste. 904, El Toro, CA 92630; (714) 837-3250.

Right

This isn't exactly the fastest way to get around the track! If you don't learn how to jump the right way, you'll spend more time on your lid than in the winners' circle.



Flight!

by MIKE DUNN

"I T'S AIR TIME!"; "Massive air!"; and "Flyin' and skyin'!" are all terms that might be screamed over the speaker at your local track when an R/C off-road racer accelerates over the obstacle known as the jump. If "crashin', smashin', bailin' and flippin' " describes *your* landing off the almighty jump, you might want to read on.

During your adventures as an R/C off-road racer, you'll run into jumps of many sizes and shapes. There are a few secrets to conquering these obstacles successfully and consistently, so I'll describe a few common jump shapes and tell you how to approach, launch, fly and land.



Try to keep your chassis level after launching off a long, ramp-type jump. This kind of jump is usually attacked at high speeds, so be careful when you land.

DRIVING TIPS FROM THE PROS

TIPS FROM THE PROS

THE BASICS

Right off the starting line, here are two things you must know about the actions and reactions of your R/C racing buggy or truck.

- The drive train directly affects how the suspension works. With the throttle, you can control the rear suspension. Under hard acceleration, the dogbone type of drive system develops friction, and the suspension linkage actually seems to stiffen. This sounds bad, but it can actually help while jumping. Here's how: while accelerating on the face of a jump, the drive system keeps the chassis level from side to side, and this makes the suspension less likely to bottom out. This action allows higher, longer and more consistent jumping.

- While your car is in midair, you can adjust its attitude and its angle by using the throttle. Accelerating will make the front end lift higher, and braking or decelerating will make the front end dive. The rotating



This racer is making sure that, while flying over this tabletop jump, his truck is parallel to the jump's landing section. By coming down parallel with the rear, slanted section of the tabletop, he is assured of a smooth landing.

your car on your palm while accelerating and braking with your other hand. Spin the front tires and turn the steering wheel as another way of changing your car's attitude.

Remember these two tips and experiment with them so you can see just how each affects your car.

WHAT'S IN A JUMP?

- The small "kicker." This jump resembles the speed bump found in shopping-mall parking lots. The two most important factors in clearing this type of jump are the approach and the flight.

Try to approach the "kicker" jump squarely, so that both front tires hit it at the same instant. Be sure to accelerate over this jump, and continue accelerating until the rear tires clear it. If the jump is at the start of a turn or in a turn, it's all right to decelerate and/or turn in the air, because the car probably isn't too high off the track, and its attitude won't have enough time to change. If the

jump is at the end of a turn or on a straight section, you'll have to slow down slightly on the approach so that you can accelerate when the front tires hit the jump. Keep

accelerating while the car is in the air so the front end stays up. Remember, the key to taking the "kicker" is acceleration.

- The "ramp." Yeah, this is the Evel Knievel motorcycle-launching ramp. If the beginning of the ramp (the transition) is smooth, the approach is easy. Approach the ramp with as much speed as you'll need to clear what-

ever is on the other side of the jump and to maintain speed after landing. Because of the smooth transition, the car should be very stable during the launch.



This is the proper way to attack a jump in the middle of a turn. You can see by the position of his truck that this racer slowed down and turned slightly just before he hit the jump.



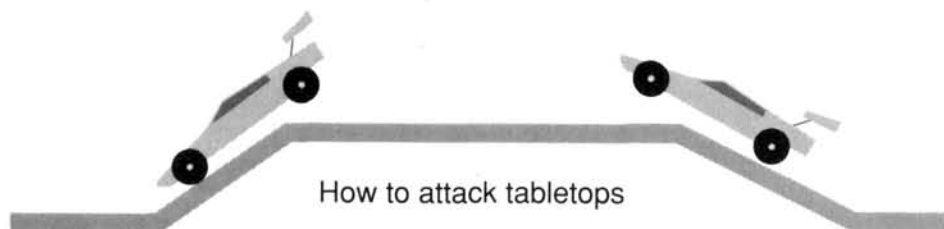
If a jump is in the middle of a turn, it's best to slow down slightly and hit it so that you don't "bicycle" through it. It's easy to flip over when you're on two wheels like this.

mass of the drive train, wheels and tires creates a flywheel effect. The heavier this rotating mass is, the more the throttle affects the flight. Prove this by balancing

jump is at the end of a turn or on a straight section, you'll have to slow down slightly on the approach so that you can accelerate when the front tires hit the jump. Keep

If the transition is at a sharp angle, then back off the throttle slightly and use acceleration to prevent the chassis from bottoming out. The critical point is the moment the car becomes airborne. Control the throttle so that the chassis stays level. (Usually, this means use anywhere from quarter- to half-throttle.) Because of its heavier rotating mass, a truck's front end will tend to lift higher, so more air will move under its body; this will make the front end lift even more. In a panic situation, you can hit the brakes in midair to get the front end back down.

Ramps are usually taken at high speeds, so the landing is very important. Keep the front wheels straight while the car is in the air; when the car lands, let it settle before you turn it. Sometimes, the car will bottom out and rebound when it lands on a



When jumping tabletops—depending upon the size of the jump—either roll up to the jump while decelerating or approach the jump while accelerating, then tap the brakes. Both methods will bring the front end down so that it's parallel with the landing section of the tabletop.

flat surface. If you steer on the rebound, the car might roll when it starts to settle. When landing on a flat, level surface, it's best to keep the car level. When landing on the back side of a double jump or tabletop jump, it's best to have the front end pointed downward slightly. This way, all four corners of the suspension will absorb the impact evenly and the car will be more controllable.



Reach for the sky! If you've miscalculated and your truck is sky-bound, tap the brakes for a split second to bring its nose down. If you grab a handful of brake, however, you'll nosedive. Do the opposite if you're front-end heavy: nail the throttle!

• Off-camber, mogul or turning jumps. If one side of the suspension hits this jump before the other side, your car might roll over in midair.

Always try to approach this jump squarely. Sometimes, however, the only thing you can do is react when your car is in the air. When the chassis starts to roll, turn into the roll. If the left side drops, turn left; if the right side drops, turn right. This will do two things. First, the rotating mass of the spinning front tires will help to level the chassis, i.e., it stops the rolling action. Second, when the car lands, the front tires will be pointed squarely toward the desired direction of travel.

You should only accelerate when you're airborne if you're driving a 4WD car, because the extra rotating mass of the front drive train and tires will help to level the chassis. I've seen 4WD cars roll to a 90-degree angle in midair and recover to a level position before landing.

Be sure to steer into the roll. Turning the steering on the face of the jump, just as the car is at the top, will make the car roll.

Most of these tips have to become instinctive before you'll notice improved performance and faster lap times, so practice, practice, practice!

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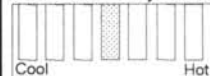
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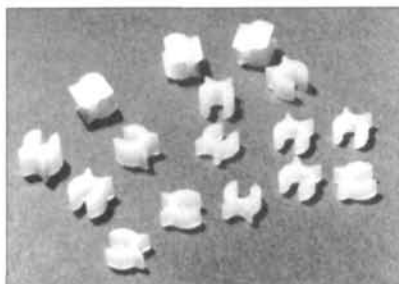
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NITRO NEWS

(Continued from page 66)

possible fuel-tank overflow. Some servos feature special O-ring seals and rubber coatings to prevent fuel and water from leaking into the case. If your servos don't have this, a thin layer of silicone sealer around the joints, the wires and on the screw heads should suffice.

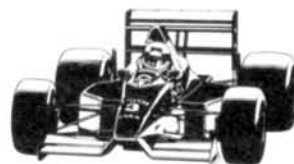
Before you buy a radio, consider some of its non-functional aspects as well. Hold the radio transmitter in your hand to test for balance and comfort. Locate the adjustments, and imagine using them during a heated race without looking at them. Can you find the battery meter with only a glance? Get a real feel for the system. And remember, buy the system that best meets your needs—not necessarily the ultra-zoot, "Star Wars" model.

Here are the addresses of the companies that are mentioned in this article:

JR Remote Control; distributed by Horizon Hobby Distributors, P.O. Box 3726, Champaign, IL 61826. **Airtronics Inc.**, 11 Autry, Irvine, CA 92718; (704) 830-8769.

KO Propo, 25-10 Sendagi, 3-Chome, Bunkyo-ku, Tokyo, Japan.

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It's that time of year again. Yes, it's time to unveil our choice for the "Reader's Ride of the Year." It wasn't an easy choice; this year's entries were more stunning than ever before. But one was exceptional. In our June '93 issue, we ran an article that featured two of Ed Proctor's 1/4-scale dragsters, and your response was phenomenal! What you *didn't* know was that the article was originally intended to show another of Ed's creations—a stunning 1/4-scale 23-T Altered. When he showed up at our photo studio with his three cars, we were literally blown away by his Altered, and we knew right there and then that we had found our "Reader's Ride of the Year." So that's why the article described only two of his cars. We wanted to save the best for last!

Proctor's Gamble Pays Off!

IN THE BEGINNING

Ed's Altered project started when he acquired a Conley* V8 engine at the 1992 WRAM show in New York. When he bought the engine, he visualized the finished project, then he began to build the car around the engine. For those who aren't in the know, the Conley V8 is a working 8-cylinder engine. The 4-stroke, 3-cubic-inch engine uses water cooling, a glow-plug ignition system and 15-percent-nitro model fuel.

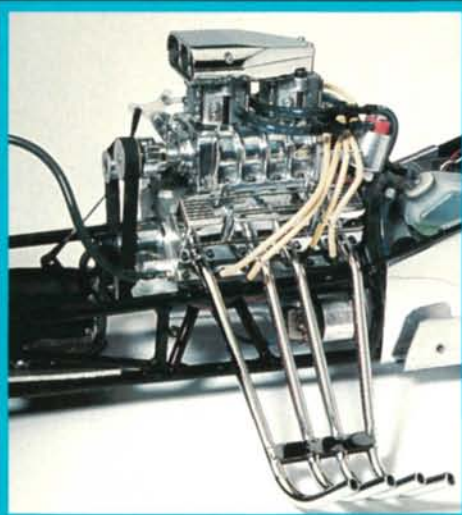
CAR ACTION'S

by JOHN HOWELL

Reader's Ride of the Year

PHOTOS BY WALTER SIDAS





V8 Virtuoso

GARY CONLEY of Conley Precision Engines Inc. has been designing engines for 15 years. With a bachelor's degree in Industrial Education, a master's degree in Industry and Technology, and two associate degrees, he has built scaled-down engines that range from V2s to V12s. His engines have been shown in magazines worldwide and have been touted as "automotive works of art."

Gary's first V8 had a .625 bore and a .625 stroke, giving it a displacement of 1.53ci. Made of bar-stock aluminum, it had a built-up crankshaft and was started by a hand-held starter. Since its inception, it has undergone significant changes and is now totally state-of-the-art.

The three center main bearings have split races; its bore is now .825, and its stroke is .625, yielding a total displacement of 3ci. There's an on-board electric starter and a custom-designed electronic glow-plug driver. The optional supercharger produces 12 pounds of boost at 13,000rpm. The crankshaft is investment cast and is supported by five main roller-bearing assemblies. A "stroker" crank that boosts the displacement to 3.6ci is available.

The engine comes in a ready-to-assemble kit at a list price of \$2,495. If you want to buy an assembled engine, tack on an extra \$500. The supercharger unit adds an additional \$1,295, and it comes assembled and tested. The engine can be ordered with one, two, three, or eight carburetors.

Once he had assembled the car, Ed had a miniature radiator made for it. When he got it back, he was told by the shop that it had been pressure tested up to 9 pounds! No leaks here. To make the radiator look authentic, he added a chrome grill and an electric fan from Radio Shack. For finishing touches, he hand-polished all the engine's aluminum parts—the oil pan, the tranny cover, the supercharger pulleys and the brackets that hold the carburetor linkage—and he had the engine's chromoly headers chrome-plated.

CHASSIS MAGIC

With help from Bill Horne of Sentry Race Cars, Ed came up with a chassis based on a funny-car frame. The crucial difference was that the Altered chassis was slightly wider to accommodate the Conley engine. The rigid chromoly chassis was powder-coated black, and the front suspension was chromed. After all the detail work had been finished, Ed set up a rolling chassis and added a manual disk brake to each wheel.

A quick-change Skellenger rear end was bolted in, and Ed decked out the car with a set of solid, custom-made, 7075 stock aluminum wheels from Rick's R/C. The tire combination is the same as that on his 1/4-scale funny car—WCM* rubber tires for a '34 coupe up front, with New Era Models* foam-filled, 9-inch-diameter, rubber-coated drag tires in the back.

Ed added braided wire to the starter wire and the engine hoses and put in a custom-made interior and dash. He also installed a fiberglass wing with chromed wing struts, a chromed wheelie bar and two switches—one to control the radio gear, and one to start



Modeler extraordinaire Ed Proctor proudly sits by his stunning Altered. The project took almost a year to complete.

the radiator's electric fan and ignite the engine's eight glow plugs. A Futaba* PCM 1024 radio and Futaba 1/4-scale servos control the car.

BODY BY ED

All that was left to be done was to find a body for his

magnificent creation. Ed decided to make his own. He formed it out of cardboard using transparent tape, and over two weeks, he poured three layers of fiberglass over the mold, then he

sanded it. Once the body had been completely sanded, it was shipped to Ken Leslie of L&S Enterprises for a spectacular paint job.

Ed's Altered won Best of Show at the '93 WRAM show and, it placed first at the Toledo Hobby Show and the Florida Hobby Show. Well, now he chalks up another win, as we issue him a check for \$500.

Ed thanks all who supported him with his year-long project: his wife, Robin; his mother, Dorothy; Bill Horne and his son Bill of Sentry Race Cars; Rick's RC; MK Engineering*; Quarter Scale Connection; New Era Models; Chestnut Hill Hobbies; Hobby Works; and Fine Design*. For additional information, contact Ed

Proctor at 7809 Louise Ln., Wyndmoor, PA 19118; (215) 836-5476.

**Here are the addresses of the companies mentioned in this article:*

Conley Precision Engines Inc., 825 Duane Ave., Glen Ellyn, IL 60137; (708) 858-3190.

Perry Pump; distributed by Varsane Products, 546 S. Pacific St., Ste. C-101, San Marcos, CA 92069.

WCM Corp., Rt. 2, Box 207A, Buffalo, TX 75831; (903) 322-4869.

New Era Models, P.O. Box 7378, Nashua, NH 03060; (603) 880-3453.

Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718; (714) 455-9888.

MK Engineering, P.O. Box 216, Seymour, CT 06483 (203) 888-5727.

Fine Design & Mfg., 2 North St., Middletown, NY 10940; (914) 342-5102. ■



A set of New Era Models foam-filled, 9-inch-diameter, rubber-coated drag tires and a Skellenger quick-change rear end grace the business end of the car. A chromed wheelie bar keeps the front wheels on the ground when the car is launched down the 1/4-scale quartermile.

RACER NEWS

WORLD • CLASS • RACING



Buckaroo switcharoo

OK, gearheads, brace yourselves. This is some of the biggest news to hit the R/C racing scene in a long time. Team Losi and Peak Performance have shocked the R/C racing world by announcing that their teams will be joining forces. That's right; now, some of Team Losi's drivers will be running Peak Performance motors and Orion batteries, and top Peak Performance racers will be competing with the new Double-X cars and LX-Ts.

Involved in the switch are Team Losi's Jack Johnson, Scott Brown, Mike Weed and Kyle Reed. (Kyle hasn't decided whether he'll continue to race.) On the other side of the fence, Peak Performance owner Rick Hohwart will be making the switch from his RC10, as will Steve Chamberlin, Scott Roberts, James Brown, Chris White, John Walters and, possibly, Rick Vehlow, if he decides to stay with R/C racing. (He's contemplating pursuing a full-size-auto racing career.)



Jack Johnson



Rick Hohwart

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RACER NEWS

switcharoo

(continued)

When we talked to Rick Hohwart, he commented, "Basically, my company is a race team, and we race to win. I wanted to expand my team, and it was rumored, at the time, that Team Losi was interested in doing the same thing. We began joking around with the guys at Team Losi, and then the talking became more serious. It was actually Kyle Reed who got the ball rolling. He told us that a few of their drivers were unhappy with their current situation, and we wanted to promote our product better, so we decided to team up and win some races. I'm happy with the deal."

Team Losi's Jack Johnson had this to say: "It's going to take a lot of pressure [to win] off me. As for my new teammates: Hohwart can make the A-Main at any race, no matter what the track condition. He's one of the best on the track; there's no doubt about it. I'm also looking forward to running his equipment again. I've run Peak Performance motors in the past, and, as a matter of fact, Rick was actually my first motor sponsor. I was always happy with his stuff, but when I became involved with Team Losi and we started doing our own motors, we had to part company. It was on good terms, though."

Jack adds, "We're also psyched about getting Steve Chamberlin. He excels at chassis and suspension tuning. A lot of key Team Associated drivers look to him for hot setup tips. Plus, we're getting some other really great drivers as well. Watch for us in '94. We're going to be dominant."

One of Peak Performance's top drivers, Carlos Gonzales, heard the news and was torn between his allegiance to Hohwart and Team Associated. This is what he had to say: "I'm not leaving Associated. When the word got out about the switch, I called Cliff and told him that I had no plans to leave, but I didn't know what I was going to do about motors. He told me not to make any decisions about that yet; Gene Husting called me the next day and offered me a full ride on his 'A' team; which covers traveling, etc. So it looks as if I'll be running Reedy motors from here on out. I'm a little hesitant, though. There are a lot of drivers on Team Associated, and I don't want to be forgotten. But I was assured that I would get the same treatment that Cliff, Brian Kinwald, J.D. and Mark Pavidis get."

When asked about the major team realignment, Carlos added, "Rick's doing it for business reasons, but I think a lot of other drivers are jumping on the bandwagon because Losi has a new car. But there's something to be said about loyalty. It's like in baseball. Fans don't jump from year to year, picking the best team. They stick with their team. Besides, I wouldn't want to go to a race and look Gene or Cliff in the face if I switched teams. They've done so much for me. Unfortunately for Associated, there are a lot of people out there who want something new, and until Associated comes out with a new car, people will be switching to Losi. It was a hard decision, but I'm going to stick with Associated."

When we caught up with Cliff Lett, he seemed relatively nonchalant about the whole situation. "I can understand the reason for the business deal. Rick's a motor man, and he has to keep his business going. You have to keep a roof over your head and food on the table. I don't hold anything against him or any of them, for that matter. But I will say this: I look very highly on people who stick with us through thick and thin."

FYI

When we covered the PROCAR Nats at the K/N Speedway in our November issue, we mistakenly wrote that Steve Fiume was running TRC tires, but he was running Jaco foams. Sorry, Steve! As a matter of fact, Jaco tires swept the Formula America Class.

ROCKIN' RACES

So, do you need to know what's happening in the racing scene? The latest wins, the triumphs, etc.? Well, read on, racers, and educate yourselves...



ROAR TRUCK NATS

This year's Truck Nats was sponsored by the Rivertown Racers in Grand Rapids, MI, and it drew more than 450 participants from more than 38 states. Jeremy Kortz TQ'd the Stock Class with a scorching 10-lap run in 4:15.91—a run that was almost as fast as his Modified TQ run of 10 laps in 4:15.89. Yep, that's right; Kortz TQ'd both classes! When it came time to run the races, no one could touch Kortz in the Stock Class. Kinwald took home the gold in the Modified Class, but it wasn't an easy victory. According to contributor Rick Schwartz, it was close to being a Kortz sweep. Look for our truckin' coverage in a future issue.

Procar Southern Nats

We turn our sights toward sunny Florida for the '93 PROCAR Southern Nats. According to PROCAR's John "T-Guy" Thawley, the competition was hot, and the weather was even hotter! Mid-90-degree temperatures wreaked havoc on all the racers, but all in all, everyone had a blast. Taking



home the win in the popular Sportsman Challenge A-Main was top qualifier Shannon Moore, with a run of 41 laps in 4:00.06. Heading up the front of the pack in the Formula America Class was top qualifier Jeff Irish, with a run of 45 laps in 4:02.59. When it was time to run the Pro Series A-Main, everyone was in disbelief. Here's why. Apparently, Chris Dosek severely injured his hand in an accident a few months ago (he put his hand through a plate-glass window and severed his tendons), and there was talk that he wouldn't return to the racing scene for quite some time. But he showed up at this race, rarin' to go, and he won the race, turning 45 laps in 4:03.75. Congratulations to all those who attended. Look for an in-depth feature in an upcoming issue.

ROAR

by RICK SCHWARTZ

The good news is that I'm in Orlando, FL, for the 1993 ROAR On-Road Nationals, and it's not raining. The bad news is: it's really hot! But here's more good news: the racing and competition turned out to be even hotter than the weather!

This year's race, held from June 2 to 6 at Greg Spehn's brand-new Southern Hobbies track, drew more than 170 racers, who were competing for championship titles in four classes. The event was sponsored by Team Associated, Team DuraTrax, Parma/PSE and Robinson Racing. Three full days of racing determined who would take home the top

trophies in 1/10 Stock, 1/10 Modified, 1/12 Stock and 1/12 Modified. Defending 1992 champions, Greg Klugh (1/10 and 1/12 Stock) and Joel Johnson (1/10 and 1/12 Modified), were the drivers to beat.

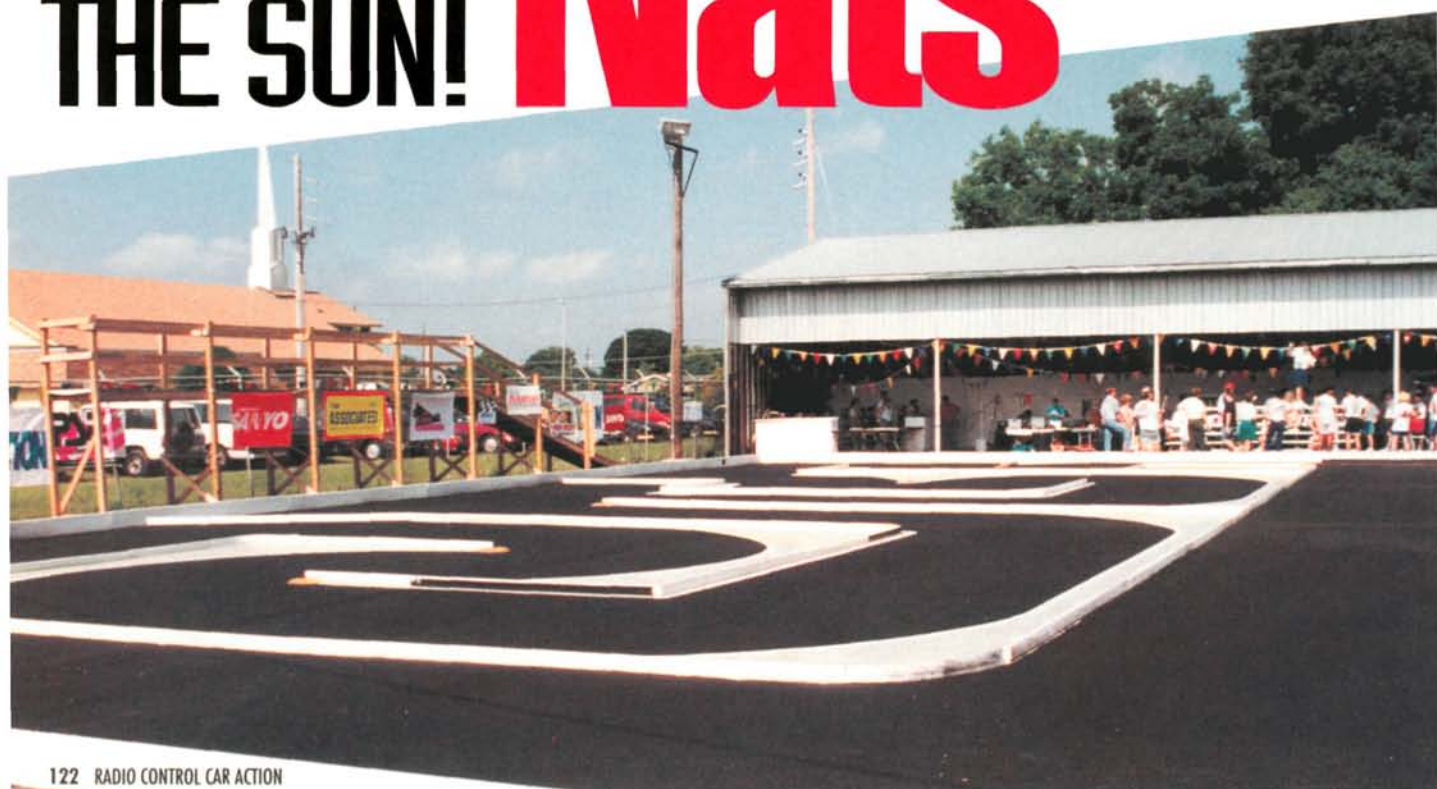
The track was perfect—flat as a board and sticky as glue. Computer-designed and built by longtime racer, Tom Raskin, it provided an excellent running surface with enough twists and turns to give fits to even the most seasoned racer. An early morning coat of sugar water combined with the blistering heat to keep the traction constant throughout the race.

PHOTOS BY RICK SCHWARTZ

On-Road



DUEL IN THE SUN! Nats





Top qualifiers: (left to right) Joel Johnson, Mike "The Swab" Mellin, Barry Baker and David Chester.

Qualifiers Beat the Heat

The first round of qualifying began on Friday morning. The qualifiers used an IFMAR start and most of the drivers held nothing back in pursuing the TQ position.

It was a long first round because three heats in $1/12$ Stock, eight heats in $1/10$ Stock, four heats in $1/12$ Modified and seven heats in $1/10$ Modified had to be decided. In on-road racing, the $1/10$ Class runs 4-minute heats, but the $1/12$ cars compete for 8 minutes. The second qualifier was also completed on Friday; the track crew did an excellent job of keeping the races flowing smoothly.

Although two more rounds were held on Saturday, three of the TQ positions had basically already been decided by then. Mike Mellin, competing in on-road racing for the first time, held the number-one position in $1/10$ Stock, with 18 laps in 4:08.23. David Chester ran the only 35-lap $1/12$ Stock race on Friday in 8:02.23. On Saturday, Sean Glazar gave him a run for his money with a 35/8:08.66, but David held on for the number-one position.

The 1992 $1/12$ and $1/10$ Modified winner, Joel Johnson, had a battle on his hands in both classes. After Friday's round, Joel was holding the $1/12$ Modified TQ with a 38/8:13.78, and he was the only driver in the class to turn 38 laps. Mike Blackstock came back on Saturday to take the pole position after the third round with a 38/8:08.86, but Joel put the pedal to the metal and finished with a 38/8:06.74 to retain the top spot.

The battle for $1/10$ Modified was a hotly contested one between Joel Johnson and Barry Baker. After all the smoke had cleared, Baker held the top spot with a TQ time of 20 laps in 4:02.27, compared with Johnson's best run of 20 laps in 4:02.97. Less than a second separated the two drivers after four full rounds of competition!

WHAT'S NEW IN THE PITS

Part of the fun of covering this race was cruising through the pits to get the scoop on all the new on-road racing products. Here's a look.

BOLINK'S "NO-NAME" ON-ROAD CAR

The boys from Georgia displayed a new $1/10$ -scale, on-road prototype. It has a completely new rear that's designed to pivot from front to back on bearings and side to side on pivot balls. According to Steve Rule of Bolink, this makes the car more stable, adjustable and consistent.

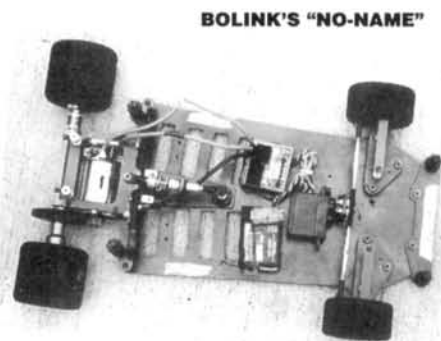
The car also features a new independent front suspension with left and right caster and camber adjustment that gives more steering and less tire wear. It has a graphite chassis, and its battery slots have been moved inward for quicker transition. In addition, the motor is centered in the rear pod for better weight distribution. The only thing this racer doesn't have is a name!

Bolink also just introduced their new Excel wheel-and-tire series, which includes wheels made for $1/10$ -scale and wheels made for $1/12$ -scale; both types are lighter and more rigid than their predecessors, and they come in all tire compounds.

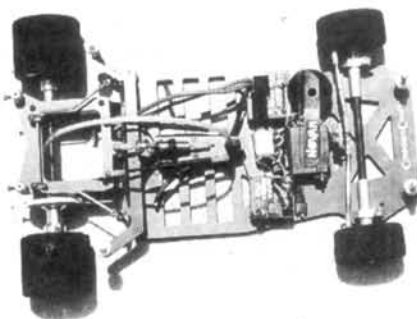
LESS IS MORE

According to Kim Davis, president of Composite Craft, their new Predator II is less expensive and simpler to set up than most on-road cars. It was designed with the advanced racer in mind, but a beginner should be able to build it. The

car has a new trunion-and-A-arm setup that can be bolted together easily. It has a graphite-beam front end with magnesium ends (with optional ends with which to adjust camber). The front end also allows you to adjust caster. Its new chassis material is stiffer and stronger and has a carbon fiber-matrix core to reduce weight.



PREDATOR II



Super Sunday Showoff



Sunday's festivities began with the judging of the concours event, which was sponsored by Rainbow Rider eyewear. The Taylor family took home both first-place trophies for best-looking cars: Amber Taylor's boldly painted Bolink Porsche 962 was the $1/12$ favorite, while her brother, Bobby, caught the judges' eyes with his magical (note the "Sorcerer's Apprentice" on the front of the body!) $1/10$ Dahms Lola GT. Prizes and trophies were given to all of the participants.



1/12 Stock

Fin.	Qual.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires
1	1	David Chester	Assoc. 12LW	Handout	Max-Cell	Tekin 411P	Airtronics	Assoc.	TRC
2	3	Stuart Levine	Assoc. 12LW	Handout	Perfect Match	Novak 410M1C	Airtronics	PSE	PSE
3	2	Sean Glazar	Assoc. 12LS	Handout	Hot Shot	Tekin 411G	KO Propo	Assoc.	A/E
4	5	Greg Klugh	Corally	Handout	Stage III	Tekin 410K	Airtronics	BBR	PSE/HPI
5	9	Steven Walker	Assoc. 12LW	Handout	Team Smooth	Novak 410M1C	Airtronics	PSE	PSE
6	6	Kevin McIntyre	Assoc. 12LS	Handout	Team Smooth	Tekin 411G	Futaba	PSE	PSE
7	8	Kevin Clark	Assoc. 12LW	Handout	TRP	Tekin	Airtronics	PSE	PSE
8	4	Chris Hanus	Composite Craft	Handout	Perfect Match	Tekin 410K	JR Propo	PSE	PSE
9	7	Dennis Cubbage	Assoc. 12LW	Handout	Team Smooth	Novak	Airtronics	PSE	PS
10	10	Jerry Wynn	Assoc. 12LW	Handout	Team Smooth	Tekin 411G	Airtronics	Bolink	Jaco

1/12 Modified

Fin.	Qual.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires
1	1	Joel Johnson	Revolver 12	Trinity	Trinity	Novak HPc	Airtronics	Andy's	TRC
2	3	Willy Decker	Assoc. 12LW	Reedy	Stage III	Novak HPc	KO Propo	PSE	PSE
3	5	Tony Neisinger	Revolver 12	Pt. Blank	Point Blank	Tekin 410K	Airtronics	Andy's	TRC
4	4	Barry Baker	Assoc. 12LS	Reedy	Max-Cell	Novak HPc	KO Propo	Assoc.	TRC
5	8	Dave Vera	Assoc. 12LW	Redline	Team Smooth	Tekin	Futaba	PSE	PSE
6	6	Bob Schoenau	Assoc. 12LW	Twister	Team Smooth	Tekin 411G	KO Propo	Assoc.	Jaco
7	9	Dan Salvatore	Composite Craft	CAM	Perf. Match	Tekin	Kraft	PSE	TRC
8	10	David Davis	Assoc. 12LW	Str. Force	Voodoo	—	Futaba	PSE	PSE
9	2	Mike Blackstock	Revolver 12	Trinity	Trinity	Tekin 410K	Futaba	Andy's	TRC
10	7	Jon Orr	Assoc. 12L	Twister	Max-Cell	Novak	KO Propo	PSE	PSE

1/10 Stock

Fin.	Qual.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires
1	1	Mike Mellin	Comp. Craft	Handout	Trinity	Tekin 411G	Airtronics	PSE	TRC
2	4	David Chester	Evolution 10	Handout	Max-Cell	Tekin 411G	Airtronics	Assoc.	Jaco
3	5	Jason Alderman	Comp. Craft	Handout	Crow	Novak HPc	Airtronics	Parma	TRC
4	10	Steven Walker	Assoc.	Handout	Team Smooth	Novak HPc	Futaba	PSE	Bolink
5	6	F. Trinchitella	Assoc. 10L	Handout	Sanyo	Novak	Futaba	PSE	PSE
6	7	Jeff Retej	Assoc. 10L	Handout	Perfect Match	Novak HPc	Airtronics	PSE	Jaco
7	9	Janien Gill	Assoc. 10L	Handout	Team Smooth	Novak HPc	Airtronics	Bolink	PSE
8	3	Stuart Levine	Assoc. 10L	Handout	Perfect Match	Tekin 411G	Airtronics	PSE	PSE
9	8	Troy Schafer	Evolution 10	Handout	Ice Pack	Novak HPc	Airtronics	PSE	TRC
10	2	Mike Spehn	Assoc.	Handout	Perfect Match	Novak	Airtronics	PSE	PSE

1/10 Modified

Fin.	Qual.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires
1	2	Joel Johnson	Evolution 10	Trinity	Trinity	Novak HPc	Airtronics	Andy's	TRC
2	5	Paul Wynn	Assoc. 10L	Redline/CAM	Team Smooth	Tekin 410K	Airtronics	Mazda	Jaco
3	7	Bobby Horan	Assoc. 10L	Reedy	Max-Cell	Novak HPc	Airtronics	PSE	PSE
4	9	Steve Radecky	Assoc. 10L	BRP	Perfect Match	Novak	JR Propo	BRP	Jaco
5	6	Willy Decker	Assoc. 10L	Reedy	Stage III	Novak HPc	KO Propo	PSE	PSE
6	8	David Martin	Assoc. 10L	Redline	Team Smooth	Tekin 411G	Airtronics	Assoc.	Jaco
7	4	Tony Neisinger	Evolution 10	Pt. Blank	Pt. Blank	Tekin 410K	Airtronics	Andy's	TRC
8	3	Mike Blackstock	Evolution 10	Trinity	Trinity	Tekin 410K	Futaba	Andy's	TRC
9	10	Ralph Burch	Hyperdrive	—	PTI	Tekin 410K	Futaba	Assoc.	Jaco
10	1	Barry Baker	Assoc. 10L	Reedy	Max-Cell	Novak HPc	KO Propo	Andy's	TRC

The Winning Recipe

Mix one 16-year-old off-road champion with an Associated 10L; add five practice runs on an on-road track; stir gently. When you're really cooking, take it out of the oven and let it cool. You now have the 1993 On-Road 1/10 Stock champion, Mike Mellin. "Unbelievable" was the word people used to describe Mike's performance at this year's championship race.

Most R/C racers know Mike as an off-roader who lives and breathes R/C; he's one of the hottest 4WD drivers around. Since he would be at the On-Road Nats for four days with his father (Richard Mellin ran the computer for

the entire competition), Mike figured he would enter one class and try on-road for the first time.

According to Richard, Mike had only five battery packs and one set of tires. Fortunately for Mike, Tim Morton of TRC Racing Tires saw him practicing and decided to take a chance on sponsoring him. Not only did Mike end up as TQ, but he also won the championship—an amazing feat for someone who had never tried on-road before his practice runs that week. Hot! Because of his success, Mike will start running the Florida On-Road Series with a sponsorship from Trinity. What if Mike decides to go to next year's Oval Championships?

It's Showtime!

The bleachers were filled with spectators, the computer was set, and the pressure was on! All the A-Mains were scheduled to run at the end, so for the top drivers, the pressure mounted as the day wore on.

The first Main was 1/2 Stock. David Chester, the TQ, was bumped early and had to work his way up from eighth place. After recapturing the lead on the 25th lap, he held on to win, with 35 laps in 8:11.43. David outdistanced the field; he was the only driver to turn 35 laps. Stuart Levine finished second, nosing out Sean Glazar by just under two seconds. This was David's first national championship and he was grinning from ear to ear.

Mike Mellin led from start to finish in the 1/10 Stock class, turning 17 laps in 4:00.61. David Chester tried for a dual win, but had to settle for second place, followed by John Alderman.

The 1/12 Modified A-Main would determine whether or not TQ Joel Johnson would repeat as champion. There was no doubt about who the best 1/12 driver was at this race; Joel led from start to finish, and he was the only driver to turn 38 laps in 8:12.88. It was a pretty impressive win considering that Joel hit the boards in the first turn and tweaked the alignment on his car. Second-place finisher Willie Decker turned 37 laps in 8:01.59; Tony Neisinger passed Barry Baker on the 35th lap to take third position, with 37 laps in 8:03.31.

The last race of the day, 1/10 Modified, was the most exciting race of the day. Pole sitter Barry Baker was taken out on the first lap and was unable to continue. Mike Blackstock took over the lead and was chased by Joel Johnson until lap eight, when Johnson passed him for first place. From that point on, it was up to Paul Wynn, who had taken over second place, to catch Johnson. The racing was fast and furious, with some bumper-to-bumper competition; and Johnson, who was the only driver to turn some sub-12-second laps, held off Paul's charge to capture the checkered flag. Hats off to Joel Johnson for repeating as 1/10 and 1/12 Modified National On-Road Champion.

As the trophies were being given out and everyone was packing up to leave, I took a minute to reflect on what a great three days it had been. The weather had been great (we all went home with a suntan), the competition had been of the highest level, the sportsmanship had been exemplary, and the facility and its crew had done fantastic work. Boy, do I love R/C racing!

QUICK!

Your car just died on the track. What do you do?



The old way: Run to track. Grab car. Run back to pit area. Attach glow plug starter. Plug in electric starter that's hooked up to 12V battery. Start engine. Run back to track with car.



The new improved KO way: Run to track. Plug new KO Propo EG Starter into car. Push button. Continue with race before your competitor is even out of the pit.

If you own the DuraTrax GT-10 or RC10T/LXT Conversion Kits, or Kyosho's Inferno 10 or Nitro Thrasher, starting your engine can be as easy as pushing a button.

KO Propo's new EG Starter System works like this: Bolt its on-board electric starter, featuring a compact gearbox and electric motor, onto the engine. Then just plug the system's hand-held starter unit into the connector harness and push the "start" button. It sends power to the glow plug and starter—and the engine starts instantly!



Before other racers are out of the pits, you'll slip the starter back on its handy belt clip and be back in action.

You can also use the EG Starter with scratch-built kits powered by an O.S. .10 FP or .12 CZ-R, or with Kyosho's Concept 10 helicopter.

And someday when you're showing off your trophies, you can tell your kids about the *old days*...before ni-starters and bulky electric starter boxes became a thing of the past.

KO PROPO

KONDO & CO., LTD.
Tokyo, Japan

The EG Starter System is not adaptable to the Kyosho Rampage series: the Kyosho 1.8 Ferrari F-1, the Kyosho Jet Stream, the Traxxas Nitro Hawk or the Kyosho Nitro Viper.

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ROAR

by WALLY CAHILL



THE 1993 ROAR Off-Road Nationals was held at the Radio Control Off-Road (RCO) track—an indoor facility in Fountain Valley, CA. It's one of the more popular hangouts of some of the best racers in the country. In addition to its challenging track, RCO boasts a pro shop and an enthusiastic, meticulous track-maintenance crew. Not a whine was heard from the crew while they worked for hours each day to keep the track in primo condition.

R/C car racing is big in this area of Southern California because two of the biggest manufacturers (Associated and Team Losi), as well as many of the after-market "speed-for-sale" companies, are just minutes away. So we were sure



PHOTOS BY A.R. FLATBUSH

VICTORY IN THE VALLEY!



Off-road Nats

Left to right: Jim Halsey, Schumacher's Warren Clapp and Mike Reedy watch as the race directors handle the chores of running the race as efficiently as possible. Everyone agreed that, compared with last year's event in Dallas, TX, this year's Nats ran much more smoothly.



we'd see some fast, furious racing action at this Nats.

NOW THAT'S CLASS!

The ROAR Nats feature three classes of racing: 2WD Stock and Modified and 4WD Modified. There used to be a class for 4WD Stock, but the waning popularity of 4WD in the U.S. (probably because there aren't any domestically produced kits) has caused its demise. Since '92, ROAR Off-Road and Truck National events have run a triple A-Main format. This is similar to how an IFMAR event is run, and triple A-Mains ensure that no driver will win a national championship by getting one holeshot, or by avoiding one first-turn pileup.

MAKING THE GRID

Saturday was qualifying day for all three classes. Team Associated/Reedy's Brian Kinwald wowed everyone with blistering runs with his Associated Team Car and Yokomo 4WD car, taking the pole position in the 2WD and 4WD Modified Classes, respectively. In the hotly contested 2WD Stock Class, Team Losi's Jeremy Kortz—fresh from a very successful outing at the NORRCA Off-Road Nats (for details, see the December '93 issue)—was clearly the man to beat, qualifying at the top of the heap with his Losi Pro SE buggy.

RACE DAY

Sunday was Mains day, when all of the lower Mains and the triple-As were run. To determine a national champ for each class, an A-Main driver's two best finishes (of the three Main events) would be combined. In the event of a tie, the driver with the best finish in his third—or "throwout"—Main would be victorious.

• **2WD Stock.** Some drivers might argue that it's actually more difficult to win the Stock Class than it is to win the Modified, because with stock motors, the cars perform similarly. It all comes down to the car setup and driving.

It was nip and tuck throughout all three races: Jeremy Kortz and Mike Weed for Team Losi, Rick Vehlow and John Walters for Traxxas, and Barry Baker and Frosty St. Clair for Team Associated were all

locked in a heated battle for the title. In the end, Kortz captured first place by driving consistently and staying out of trouble. His teammate, Mike Weed, came in a close second; Rick Vehlow placed third; and Baker and St. Clair rounded out the top five.

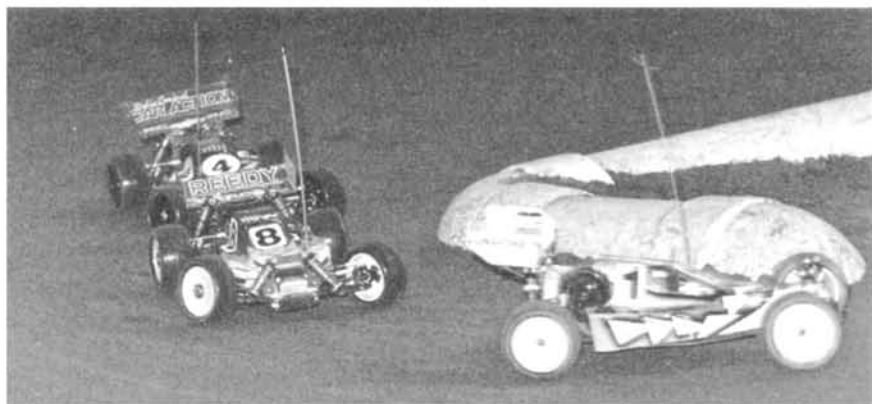
• **2WD Modified.** Brian Kinwald was the guy to beat in the 2WD Modified Class; this guy was just tearing up the track. Not even his teammate Cliff Lett (aka, the Buggy Master) could catch him as Kinwald would come down the front stretch wide-open and then pitch his car through the first turn the way I can only do in my dreams. It seemed that the home-track advantage was definitely working for Team Associated because Jammin' Jay Halsey, with his Losi buggy, was the only non-Associated top-three finisher in any of the three races.

• **4WD Modified.** The 4WD modified buggies rounded out the program. If you've never seen these things run, go see them!

Having the front wheels pulling through a turn along with the rear wheels pushing is the hot ticket. I took a closer look at some of these little rocket ships and saw some of the most technically advanced machinery I've ever seen; NASA could learn a thing or two from the R/C community!

Glance at the race results, and you'll see that four of the 10 A-Main cars were Yokomos, three were made by Kyosho, and three were from Schumacher.

As he had done in the 2WD Modified class, Brian Kinwald TQ'd and ran away with the race. He left some very talented drivers in the dust, scratching their heads and wondering whether they had grabbed the right battery pack from their pits. Cliff Lett was Brian's only threat; he stuck to Brian like old servo tape (just barely) and finished second in the first two races. Cliff's chances of an overall win faded in the third race; he fell from contention when Associated/Peak Performance driver Carlos Gonzales cruised to a win.



J.D. Beckwith (car no. 4) tries to get around traffic with his trick Dukeomo car. J.D. (prominently displaying his favorite magazine's sticker on his car's wing) offers custom-made graphite parts for Yokomo owners. The parts are very popular, and many of his teammates use them on their cars.

In the Stock Class, Team Losi's Jeremy Kortz TQ'd, then he went on to win overall.



ROAR OFF-ROAD NATS

■ 2WD MODIFIED

Fin.	Qual.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires
1	1	Brian Kinwald	RC10	Reedy	Reedy Sanyo	Novak HPC	Airtronics	RCPS Mirage Assoc.	Pro-Line
2	5	Mark Francis	RC10	Reedy	Reedy	Novak HPC	Airtronics	RCPS Mirage SS	Kyosho/Losi/Pro-Line
3	10	Todd Handel	RC10	Reedy	TQ Technol.	Novak HPC	Caliber 3P	RCPS Mirage	Yokomo/Assoc/Pro-Line
4	4	Jay Halsey	Losi Pro SE	Trinity	Trinity	Novak	Airtronics	Jammin' SE	Losi
5	6	Rick Hohwart	RC10	Peak Perf.	Team Orion	Novak HPC	Futaba	RCPS Mirage	Kyosho/Pro-Line
6	8	Cliff Lett	RC10	Reedy	Reedy Sanyo	Novak	Airtronics	RCPS/Mirage	Pro-Line
7	9	Jack Johnson	Losi Pro SE	Trinity	Trinity	Novak HPC	JR R-756	Jammin'	Losi
8	2	Carlos Gonzales	RC10	Peak Perf.	Team Orion	Novak HPC	Airtronics	RCPS Mirage SS	Pro-Line
9	7	Scott Hughes	RC10	Reedy	Reedy	Novak HPC	Futaba	RCPS	Kyosho/Pro-Line
10	3	Scott Brown	Losi Pro SE	Losi	Excell	Novak	Airtronics	Pro SE	Losi

■ 4WD MODIFIED

Fin.	Qual.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires
1	1	Brian Kinwald	Yokomo	Reedy	Reedy/Sanyo	Novak HPC	Airtronics CS2P	Yokomo	Pro-Line
2	2	Carlos Gonzales	Lazer ZX-R	Peak Perf.	Team Orion	Novak HPC	Airtronics	Lazer	Pro-Line
3	4	Cliff Lett	Yokomo	Reedy	Reedy/Sanyo	Novak	Airtronics	Associated/Yokomo	Pro-Line
4	6	J.D. Beckwith	Dukeomo	Reedy	Reedy/Sanyo	Novak	Airtronics	Associated/Yokomo	Pro-Line
5	9	Mark Pavidis	Prototype	Reedy	Reedy	Novak HPC	Airtronics CS2P	Associated Yokomo	Pro-Line
6	5	Scott Brown	Lazer ZX	Revolution	Excell	Novak	Airtronics	Lazer	Kyosho
7	3	Jack Johnson	Lazer ZX-R	Trinity	Trinity	Novak	JR R-756	Kyosho	Kyosho
8	7	Jay Halsey	Schumacher	Trinity	Trinity	Novak	Airtronics	Jammin' SE	Losi
9	8	Derek Furutani	Dukeomo	LRP Blue	LRP SCRC	Novak	Airtronics	Yokomo Works	Pro-Line
10	10	Jonathan Morgan	Schumacher	Reedy	Reedy	Novak HPC	Airtronics	Schumacher	Kyosho/Pro-Line

■ 2WD STOCK

Fin.	Qual.	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires
1	1	Jeremy Kortz	Losi Pro SE	Handout	Team Smooth	Tekin	Airtronics	Jammin'	Losi
2	4	Mike Weed	Losi Pro SE	Handout	Ballistic	Novak	Airtronics	Jammin'	Losi
3	2	Rick Vehlow	TRX-3	Handout	Orion	Novak HPC	Airtronics	TRX -3	Losi/Pro-Line
4	7	Barry Baker	RC10	Handout	Reedy	Novak	KO Propo	RCPS	Pro-Line
5	10	Frosty St. Clair	RC10	Handout	Reedy	Novak	Airtronics	RCPS	Kyosho/Pro-Line
6	9	Lil' John Waters	TRX-3	Handout	Orion	Novak HPC	Futaba	TRX -3	Losi/Pro-Line
7	6	Mike Fletcher	Losi Pro SE	Handout	Stealth	410-HPC	Airtronics	Jammin'	Losi
8	5	Jim Jacobson	RC10	Handout	Reedy	Tekin 411G	CS2P	RCPS	Kyosho/Pro-Line
9	3	Jose Escamilla	RC10	Handout	Supreme	Novak M1	KO Propo	RCPS	Kyosho/Pro-Line
10	8	Curtis Stock	Losi Pro SE	Handout	Ballistic	Novak HPC	CS2P	Jammin' Pro SE	Fuzzies/World Pins



The track crew spent countless hours grooming the track between rounds to ensure that the racing conditions would be the same for all the drivers.

COMPETITION KUDOS

So what were my impressions of the '93 ROAR Off-Road Nats? For one thing, I learned that high-dollar mods aren't necessary to win races; the fast guys use nearly stock car kits! Also, there's no substitute for practice time! Brian Kinwald can attest to that (while he's polishing his two national-championship trophies). Congratulations to Brian and Jeremy Kortz for their prestigious wins and to RCO for staging such a successful event. ■



R/C DOCTOR

by DOUG MERTES

Short and Skinny 10L

IHAD A PROBLEM: I love racing, but most of the carpet tracks near my home are set up for $1/12$ -scale cars. I love $1/12$ -scale cars, but my eyesight isn't what it used to be, so I can't see them well enough to race with any degree of success. I can see $1/10$ -scale cars well enough, but horsing a big, $1/10$ -scale pan car around a super-tight track isn't really my idea of fun. And, like oval stock cars, the "normal" wide cars aren't really true to scale—nothing like their real-life GTP counterparts. What should I do?

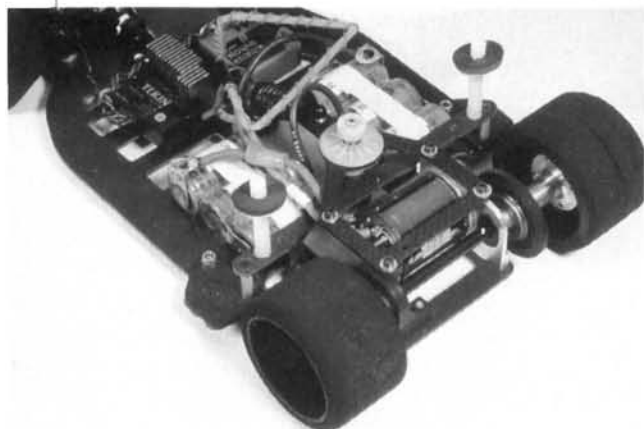
My solution is a $1/10$ -scale car that's within the dimensions specified in the ROAR rule book, but is shorter and narrower than the Team Associated 10L that I was used to. This



After major surgery, I accomplished my goal—a shorter, skinnier 10L for tight carpet burning.

might sound like a lifetime's project, but d'you know what? It wasn't really all that hard!

PRESCRIPTION FOR PERFECTION?



Stylin' out the rear end of my 10L is a Trinity 17-turn, triple-wind modified motor, a Du-Mor 108-tooth spur gear and a GPM two-piece aluminum axle. A set of Sanyo 1400 SCR batteries, a Tekin ESC and a Novak receiver send the car on its way.

I started with a stock Associated* 10L that I had raced for several years. Then I ordered a Composite Craft* conversion kit that included all the graphite goodies needed to thin this puppy down to superspeedway width: a chassis, top and bottom damper plates, a T-bar and a damper-post support plate. (The last piece is critical to good car handling.)

When racing my 10L, I learned that the original long damper post can bend

under load or when subjected to the stress of impact. (Note that the new 12LW cars have a 10LSS-style damper-post support plate, too.) The 10LSS damper post fits the wide cars, too, by the way.

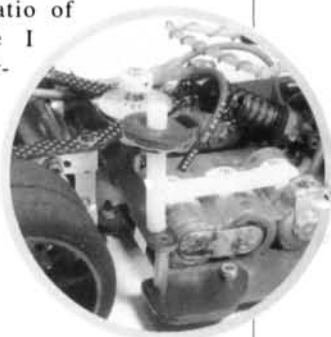
It was time for major surgery. First, I measured and marked the positions of the mounting holes for the new Associated front end. Then, using a hacksaw, a hand file and a Dremel tool with a sanding drum, I carefully shortened the front end of the chassis. This was an

important part of my plan: by using this front end, I'd be able to true the front tires down to about 56mm and still have the $1/4$ -inch ground clearance that the local tracks demand. I'd also be able to make camber/caster and toe-in/toe-out adjustments easily.

I could have shortened the chassis at the rear by almost an inch, but some of the mounting holes would then have been too close to the original holes

(believe me, I tried it!).

The 10L I started with had a wheelbase of $10\frac{1}{4}$ inches and a track of 9 inches with full-width foam tires—a length/width ratio of 1:1.14, i.e., it takes 1.14 track lengths to equal the length of one wheelbase. The only thing I didn't like about the original 10L's handling was that it "pushed" a little in the corners, so I wanted to narrow its rear track. I wanted a rear-track width of $7\frac{1}{4}$ inches—a 1:1.31 length/width ratio. To achieve this, I narrowed the tires and wheels on a tire truer, and I was all set! At the front, I kept the original front length/width ratio of 1:1.3, because I thought that narrowing the front too much might make the car traction-roll too easily.



Composite Craft supplied the graphite components that narrowed the 10L considerably: a chassis, top and bottom damper plates, a T-bar and a damper support plate.

Besides, this method gave me the wheelbase I was looking for—about 9½ inches. The ROAR rules say that the wheelbase must be between 9 and 11 inches, so I'm safe.

BUMPER & BODY BUSINESS

Next, I made a front bumper out of white Kydex, and I mounted the electronics (a Novak* NER 3FM receiver for my trusty Futaba* PCM radio, a Tekin* 411P ESC, a Futaba 132H steering servo, a matched set of Sanyo 1400 SCR batteries, and a Trinity* 17-turn, triple modified motor). I mounted a Du-Mor* 108-tooth spur gear on the GPM* two-piece aluminum axle, and it was

almost ready to roll!

That's right—almost. After all, who makes a *body* for a short, narrow pan car? Associated makes a Jaguar body for the 10LSS, but it was too long for my purpose. I looked at and measured a lot of Lexan before I found a couple of bodies that were original equipment on the Kyosho* "Scale Series" cars of a few years ago. The Toyota and Nissan bodies were precisely the size I needed, and each came with a rear wing and headlight buckets! *Cool!*

I dug up an old issue of *Car Action*, found the paint scheme for the Toyota, thought it was pretty neat and duplicated it with Pactra paints and some decals I had in my sticker file.

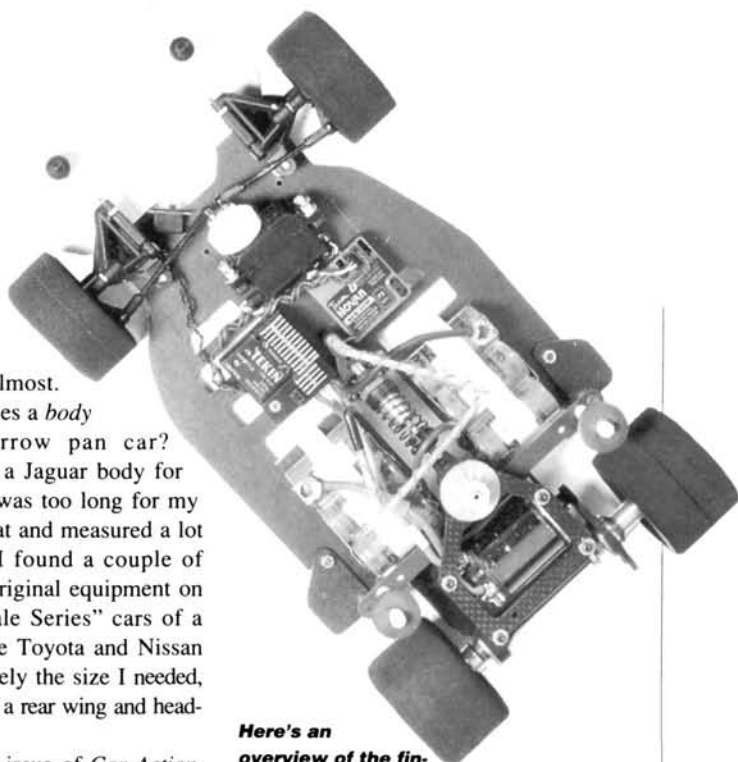
With everything buttoned down and charged up, I headed to a local track to see whether the car would handle the way I hoped it would.

THE PATIENT PERFORMS!

At first, the car pushed waaaaay too much. Coming into the infield from the oval part of the track, it could hardly make the 180-degree left turn without swinging wide at the entrance—not the *fast* way around the track! Traction compound applied to the inside halves of the front tires made things a little better.

Adjusting the front end for 0 degrees of caster also helped, but the car still didn't turn in quickly enough. Adding several degrees of negative camber (pointing the tops of the wheels inward) and increasing the shock's spring tension just a hair did the trick. Soon it was blasting around the course with all the finesse of a

1/12-scale car! Transitions in S-turns were smooth and easy—no more



Here's an overview of the finished product. Its 9½-inch wheelbase complies with the ROAR wheelbase specification of 9 to 11 inches.

point and squirt!

After seeing it run, several people in the pits wanted to take a closer look at "that short, skinny car." I let them test-drive it, and they were soon hooked! I'd love to be able to say that I TQ'd in my class that night and then won the A-Main by a full lap, but I'd be lying. Instead, I'll just say that I had a good time and placed well up in the A—good enough for the first time out with any car.

If I had it to do all over again, would I do anything differently? You bet! I'd do it a lot *sooner!*

**Here are the addresses of the companies mentioned in this article:*

Associated Electronics Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626; (714) 850-9342.

Composite Craft, 7640 Commerce Center Dr., Orlando, FL 32819; (407) 351-6081.

Novak Electronics Inc., 18910 Teller Ave., Irvine, CA 92715; (714) 549-0857.

Futaba Corp of America, 4 Studebaker, Irvine, CA 92718; (714) 455-9888.

Tekin Electronics, 940 Calle Negocio, San Clemente, CA 92673; (714) 366-9016.

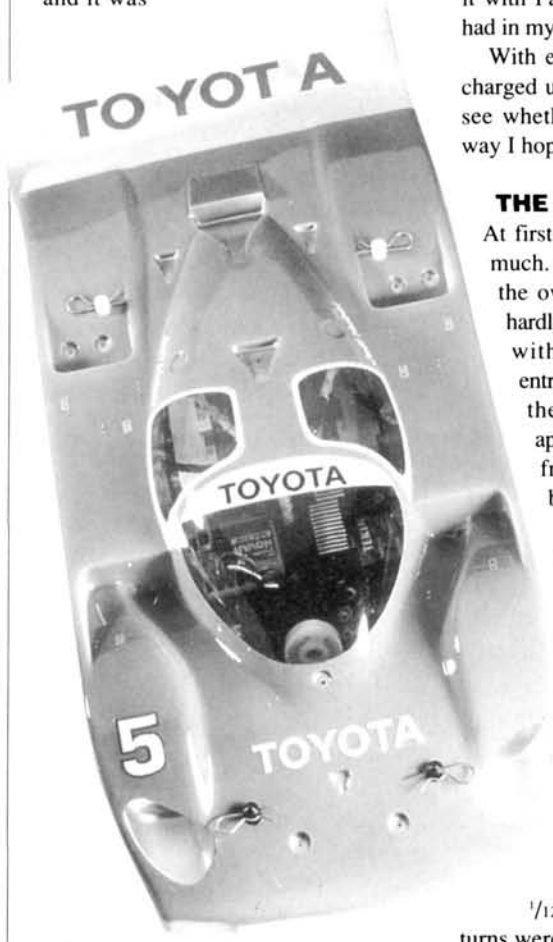
Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705.

Du-Mor R/C Inc., 1002 Union Landing Rd., Cinnaminson, NJ 08077; (609) 829-1338.

GPM, distributed by Hobby Etc., Greystone Plaza, 650 Amherst St., Nashua, 03063; (603) 595-8549.

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LETTERS

(Continued from page 9)

GASEOUS GO GETTER

What would be better for off-road racing—a Nitro Hawk or a gas conversion kit for the RC10T or LX-T? I already have both the LX-T and RC10T, and money is no object. Also, how come the Schumacher Nitro 10 isn't winning any races—even though it has a bigger engine?

ETHAN ZEHREN
Brenham, TX

Well, Ethan, I just got back from a gas race in North Carolina, and the Traxxas Nitro Hawks and conversion kits were out racing in full force. Either of them could definitely take you to the winners' circle. I think that conversion kits are good if you have an electric truck that's just sitting there collecting dust.

As for the Schumacher Nitro 10s, they can't compete under the rules at the Kyosho gas races because they run .15 engines, not the .12 engines that everyone else runs. Rumor has it that Schumacher will import kits that will "sleeve down" their engines to .12 size. If they get them in time, look for a Schumacher team totting souped-up Nitro 10s at the upcoming gas race in Hemet, CA.

JH ■

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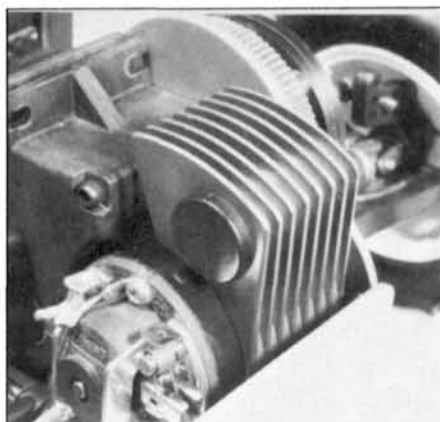
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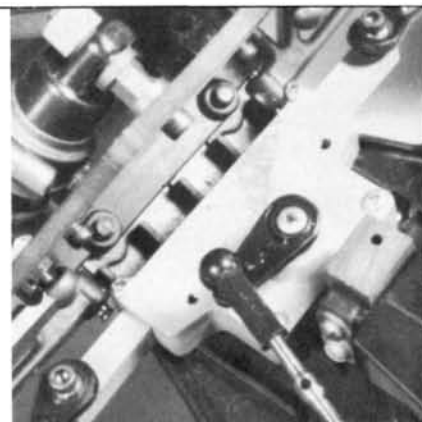
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SCOPING OUT

SCI DOMINATOR

by JOHN RIST

WHAT IS IT?

It's the SCI* Dominator electronic speed controller (ESC), and it has yanked me back to the fun side of the hobby—backyard burning and scale building. It has reverse, so it's not well-suited to serious racing (for safety reasons, most tracks don't allow reverse), but it should be great for monster trucks, buggies, scale projects, or even MRC's exciting new World Scale.

WHAT IT HAS

- reverse (fully controllable)
- 12 high-voltage FETs—six for forward and six for reverse—that should easily be able to handle a 14-cell pack
- built-in BEC
- built-in pulse checker
- one-pot (neutral) setup.
- Tamiya-style battery connectors and bullet-style motor connectors
- BEC wire loop that you can cut if you want to run more than 10 cells or add an on/off switch
- low-battery current limiter

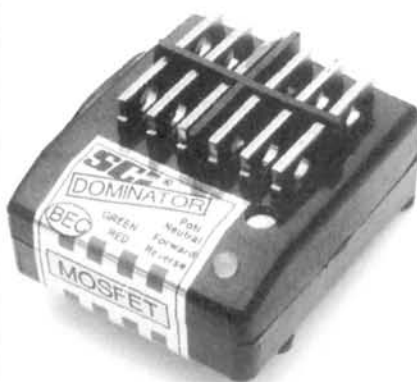
Of course, it comes with an instruction sheet, decals, motor capacitors and a universal receiver-connector system.

LET'S SCOPE IT OUT

By removing four screws (and breaking the factory warranty seal!), I was able to look inside and see the Dominator's conventional construction. Everything looked first-class. Its parts are surface-mounted on both sides of the printed-circuit board, and its 12 massive FETs stand in two rows with their leads passing through the board and going to massive, copper circuit traces. The 13-gauge, silicone-insulated, battery wires and motor wires go directly to the traces, too—a setup that should provide low “on” resistance.

RULE OUT RESISTANCE!

With 12 amps of current flowing, I measure the voltage drop across the con-



troller and then calculate the resistance by dividing the measured voltage drop by 12 amps. I measure the resistance twice—along the full length of the battery and motor wires (including connectors) and 2 inches along them. The first reading helps me to determine an ESC's “on” resistance as it comes from the factory, and the second gives a standard reading with which I compare ESCs.

Along the full length of the wires, the voltage drop was 0.31 volt—an “on” resistance of 0.026 ohm. Two inches along the wires, the voltage drop was 0.27 volt—a resistance of 0.022 ohm. Is this world-class, low “on” resistance for a racing-style speed controller? No, but it *is* lower than the average low. (Reversing ESCs always have higher

MANUFACTURER'S CLAIMS

- According to the instruction sheet, reverse is as controllable as forward—a claim *not* made for most reversing ESCs.
- The Dominator's “on” resistance is the same in reverse as it is in forward.
- Its 12 FETs are grouped so that forward and reverse have equal power-handling capability.
- It will handle two 7-cell packs connected in series (14 cells)—*outstanding!* (For example, MRC's World Scale cars require two screaming 540-style motors for power.)

resistance than forward-only-with-brake ESCs.)

How about SCI's claim that the Dominator's performance is the same in reverse as it is in forward? Sure enough, in full reverse, 2 inches along the wire, I measured a 0.27V drop—0.022 ohm.

CONTROLLER CUISINE?

I “cook” every ESC I test by adjusting the resistor bank to pass 20 amps of current then jamming the throttle wide open and letting the ESC pump the 20 amps. The Dominator doesn't have heat sinks, so...

...I couldn't be *that* brutal! It was 95 degrees Fahrenheit in the shade, and my workshop isn't air-conditioned, so I looked through my junk box and found a couple of heat sinks.

The Dominator's FETs are in four groups of three. As is pointed out—twice!—in the instruction sheet, you must *never* short any of these groups together, so I really needed *four* heat sinks (one for each group). I halved the two I had found, and they fit as if they had been custom-made.

With the heat sinks in place and the current at 20 amps, I let the Dominator run for 15 minutes. Was it cooked? Almost! The heat sinks were hot enough to cause *major* pain for anyone who tried to hang on for more than a split second. Of course, this is to be expected when you run a reverse-style ESC hard, in reverse, without air cooling. What's important is that the Dominator operated as smoothly at the end of the test as it did at the start.

DOMINATOR AVOIDS DISASTER!

In my dead-short test, I check to see whether the controller could survive the heavy current it would have to withstand if a gear jammed or the motor fried.

I put a jumper cable across the motor leads and cranked the Dominator wide open. Much to my surprise, there was

virtually no current flowing; but when I removed the short, the controller operated normally.

A little research, i.e., reading the instruction sheet, taught me that the Dominator has automatic current limiting. If the battery voltage drops below a certain point, the Dominator will throttle back the motor current to ensure that you maintain steering control and avoid having a runaway. With the dead-short applied, the voltage dropped, and that caused the Dominator to go into the automatic current-limiting mode.

But I hadn't finished crunchin' this controller. I dug out a bunch of load resistors and built a 40A load for a 6-cell battery pack. (Ni-Cd batteries can put out more than 100 amps, so I knew that they could easily support a 40A load.) With this rig cobbled together, I jammed the pedal to the metal. The current jumped to 40 amps, and the Dominator got very hot in a hurry, but there was no damage. This controller can obviously take abuse and keep on trucking.

TIME TO TEST

I installed the Dominator in my Kyosho Sideways, but—much to my surprise and dismay—I couldn't get the Dominator to work, even though it had worked very well on the test bench. One of the pins had backed out of the universal receiver connector that I had assembled to match my Futaba J-style receiver. So, always remember to seat the pins properly when you install them in the connector shell.

Next, I had trouble adjusting the ESC's neutral potentiometer. I couldn't find a setting that gave me neutral, full forward and full reverse. I found that my Futaba Magnum AM transmitter has a trigger-centering switch that permits more travel for forward than for reverse. I rotated this switch to the 50-percent-forward/50-percent-reverse position. Then, by adjusting neutral on the Dominator and throttle trim on the transmitter, I found a setting that yielded full forward and full reverse.

Time to hit the asphalt! I had forgotten how much fun it was to have a car with full reverse: 180-degree sliding turns and backing up at full-bore were a snap. And when the car hit the curb nose-first, I just reversed it out of trouble.

The car was fast and smooth in forward and reverse (of course, reverse isn't as fast as forward because of motor timing). Run times were respectable and, as promised, the Dominator started to limit current as the battery died. This means a

DIMENSIONS

Height0.81 in.
Width1.50 in.
Length1.66 in.
Weight (with wires)2.1 oz.

TUNING

Access to controlsExcellent
Ease of adjustmentFair

WARRANTY180 days

ELECTRICAL (Manufacturer's specs)

Max. voltage20 volts (16 cells)
Min. voltage4 volts (4 cells)
Max. current (fwd./rev.)600 amps

Cont. current (fwd./rev.)150 amps
Resistance (fwd./rev.)N/A

TEST PARAMETERS

Voltage6 volts
Current12 amps
Voltage drop
—along full length of wires0.31 volt
—2 in. along wires0.27 volt

CALCULATED RESISTANCE

Resistance
—along full length of wires ..0.026 ohm
—2 in. along wires0.022 ohm
BEC voltage, 6-cell pack5.94 volts
Resistance = voltage drop/current

Comments: an ESC with reverse is better for backyard burning and scale projects than organized track racing. The Dominator is well-built and can stand quite a lot of abuse. Reverse is fully controllable and handles as much power as forward. (Scale buffs looking for realism should like this.) It can handle 16 cells, so it's ideal for the twin 7-cell packs in monster trucks and MRC World Scale vehicles.

gradual shutdown with time to drive home instead of an abrupt dump that leaves your car stranded.

And the heat sinks?—warm, but well within safe operating limits.

DESIGNED TO DOMINATE?

—not really, but it *is* extremely well-suited to all-out fun! And I'm sure it's destined to find its way into buggies and cars that will tear up the nation's backyards and parking lots.

• *What about its manufacturer's claim that it will handle two 7-cell packs connected in series?*

If you hook the two motors in parallel across a single 7-cell pack, the current doubles and run times are halved. This puts the current in the 40A range—beyond the safe operating limits of most speed controllers. Forty amps lead to very hot running and short run times. I think a twin-motor setup should be run on twin battery packs. If you wire the two motors and two battery packs in series, each motor will “see” the voltage from one of the packs, and the current will drop to an average of 20 amps. You can control the whole shebang with one speed controller as long as it can stand the combined voltage of both battery packs. The Dominator is a logical choice for this job because it will comfortably handle 20 amps and can handle 20 volts (16 cells).

• *How's the instruction sheet?* There aren't any connection diagrams, but if you read the sheet carefully, you'll know enough to install the Dominator.

• *Does it come with connectors?* Yes; a complete set, so it's pretty “goof-proof” to install. Just pay attention to the color of the wires when you hook up a battery the first time. Match the ESC's red and black wires with the battery's red and black wires. Connect the battery pack backwards, and you'll destroy your controller.

• *Any problems?* A minor one: at first, I couldn't get full power in forward and/or reverse. I had to juggle the throttle trim setting on the transmitter and the neutral adjustment potentiometer on the Dominator before I had full range control in forward and reverse with a dead “off” neutral.

• *Will it be OK without heat sinks?* Yes, in most applications, the Dominator should work well without them. If you run hot motors and gearing that give you run times of less than 5 minutes, heat sinks are advisable.

So if you fancy some fun but have no desire to dominate, check out the SCI Dominator. It's a capable unit that may well have just the features you're looking for.

**Here's the address of the company featured in this article:*
SCI Corp of America, P.O. Box 13099, Sarasota, FL 34278. ■

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TRUCK PULLING

(Continued from page 72)

The truck had more than enough power to get the job done, but running the low-cost foams hurt its performance.

After the Nats, I decided to try a set of Pro-Line* Pro 90 mini-spikes on Pro-Line wheels. Man! What a difference! After I had changed the tires and moved more weight up front, the puller took 225 pounds for a full-pull ride in less than 30 seconds. I kicked myself for leaving these tires at home during the Nats, but that's OK. The Worlds are just around the corner!

WHAT ELSE CAN I SAY?

Overall, the puller did everything as expected: it was cheap, competitive and a lot of fun. If you're wondering how much it cost to build this puller, minus electrics: it cost only 70 bucks. Of course, I split the cost of the chain with my racing buddy, Chris. If you're new to the R/C hobby and have no gear at all, you could build this truck for less than \$350, and that includes an inexpensive AC/DC charger. And because prices vary, you could build this truck for even less.

I thank Chris Moran for all his help with building this truck. For more information on truck pulling, contact the National Radio Control Truck Pulling Association, P.O. Box 894, Waukesha, WI 53187-0894.

*Here are the addresses of the companies mentioned in this article:

Bolink R/C Cars Inc., 420 Hosea Rd., Lawrenceville, GA 30245; (404) 963-0252.

Parma Int'l Inc., 13927 Progress Pkwy., North Royalton, OH 44133; (216) 237-8650.

JR Remote Control, distributed by Horizon Hobby Distributors, P.O. Box 3726, Champaign, IL 61826.

Mike's R/C Truck Weights, 3186 S. Phillips Rd., Harrod, OH 45850.

Kyosho, distributed by Great Planes Model Distributors, P.O. Box 9021, Champaign, IL 61826; (217) 398-3630.

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